

**Technical training.**  
Product information.

## **I01 Information and Communication**



**BMW Service**

Edited for the U.S. market by:  
**BMW Group University**  
**Technical Training**

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# General information

## Symbols used

The following symbol is used in this document to facilitate better comprehension or to draw attention to very important information:



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Contains important safety information and information that needs to be observed strictly in order to guarantee the smooth operation of the system.

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## Information status and national-market versions

BMW Group vehicles meet the requirements of the highest safety and quality standards. Changes in requirements for environmental protection, customer benefits and design render necessary continuous development of systems and components. Consequently, there may be discrepancies between the contents of this document and the vehicles available in the training course.

This document basically relates to the European version of left-hand drive vehicles. Some operating elements or components are arranged differently in right-hand drive vehicles than shown in the graphics in this document. Further differences may arise as a result of the equipment specification in specific markets or countries.

## Additional sources of information

Further information on the individual topics can be found in the following:

- Owner's Handbook
- Integrated Service Technical Application.

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The information contained in this document forms an integral part of the technical training of the BMW Group and is intended for the trainer and participants in the seminar. Refer to the latest relevant information systems of the BMW Group for any changes/additions to the technical data.

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# I01 Information and Communication

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# I01 Information and Communication

## 1. Introduction

The information and communication system is becoming more and more important in automotive manufacture. Therefore, in the I01, some of the already existing BMW systems are used.

The I01 also boasts intelligent ConnectedDrive functions with which the customer can easily and comfortably arrive at his destination. The I01 is equipped with the BMW navigation system, which is tailored to the specific requirements of electric mobility. For example, the navigation system of the I01 provides information on the most efficient and environment friendly route for a maximum range and shows the driver all the available charging stations en route.

With help of the BMW i Remote app the driver can plan his route before the journey and check the maximum range regularly. He can also control all aspects of the charging process at any time.

BMW i looks beyond the vehicle itself for the urban mobility experience. The new mobility services such as DriveNow is one such example. By means of intermodal route guidance public transport offers can be included in the mobility planning. The connection between the outside world and the vehicle makes driving in mega cities simpler, more pleasant and more efficient.

This training material is intended to provide an overview of the information and communication systems used.

The I01 is available with 2 navigation headunit options. The “Entry NAV” or SA606 Business Navigation system is the standard equipment. It offers the new Basic Headunit, a 6.5” screen and most of the basic navigation features which are essential for the functions of the i3. And the optional equipment SA609 Navigation Professional with the HU-H headunit which offers a 10.25” screen and adds a split screen, media hard drive, 3D maps, etc.

Optional equipment	Headunit	CID	Controller	Navigation	DVD drive
Navigation Business (SA606) is the standard equipment at the series launch.	Basic Headunit	6.5”	Standard 7-button	Yes (Basic)	No
Navigation Professional (SA609) SA609 is offered as part of the ZTD Technology + Driver Assistance Package.	Headunit High	10.25”	7-button with touchpad	Yes	No



**There is no longer a CD/DVD drive provided in either headunit variant and only the HU-H provides a multimedia internal hard drive.**

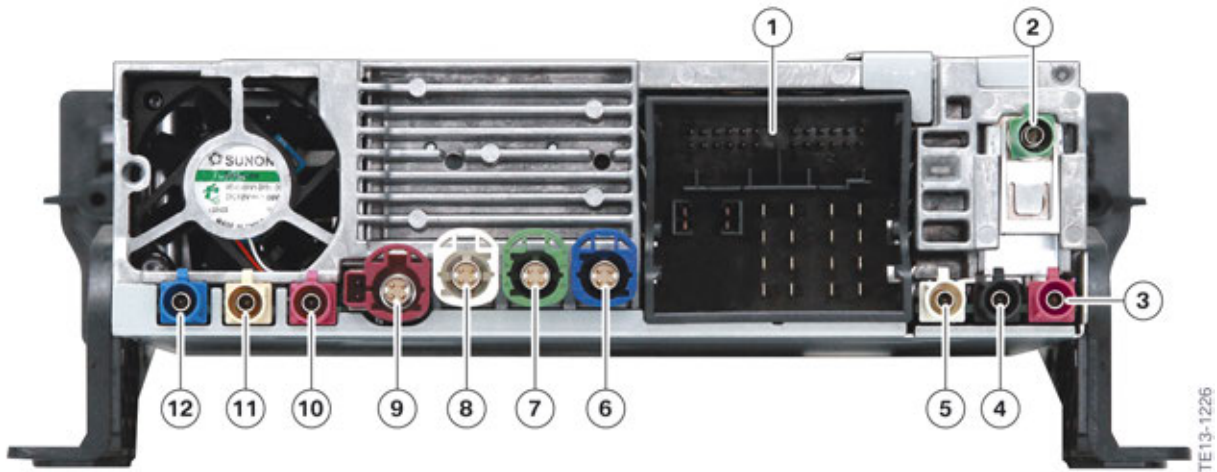
# I01 Information and Communication

## 2. System Components

### 2.1. Entry Navigation system

A new generation of navigation systems is offered by BMW and the roll out starts with the I01 in the “Entry NAV” or Basic Navigation system. This Entry Navigation system will be phased in and offered on most BMW vehicles as SA606 Navigation Business system. The new headunit comes from Magneti Marelli and replaces the familiar Champ 2.

#### 2.1.1. Basic Headunit



Housing of the Basic Headunit

Index	Explanation
1	Main connector
2	DAB L band antenna; color code green (not used for the US market)
3	SDARS satellite radio color code burgundy
4	FM1 antenna; color code black
5	FM2 antenna; color code white
6	USB2 connection; connection for customer smartphone via telephone base plate; color code blue
7	USB3 connection; Telematic Communication Box (TCB) color code light green
8	USB1 connection; customer access at Aux-IN USB port at the center console (also for data imports/exports); color code white
9	APIX connection and voltage supply of the central information display; color code violet
10	Preparation of WLAN antenna; color code burgundy
11	Bluetooth antenna connection; color code beige
12	GPS antenna; color code blue

# I01 Information and Communication

## 2. System Components



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**Due to the EMF related with high voltage components AM radio band is not available in the I01.**

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The hardware structure of the Entry Navigation Basic Headunit is similar to Headunit High. Therefore the hardware contains the necessary components for the navigation system. With the exception of the yaw rate sensor, which in the I01 is housed in the Crash Safety Module (ACSM) and is transferred to the headunit via a bus signal. A non removable flash memory with 32 GB is installed for the Entry navigation system for permanent storage of the map data.

As with Headunit High the Basic Headunit does not have a CD/DVD drive. A map update can be performed by the customer via the USB audio interface or by Service via the BMW i programming station.

SA606 Business navigation system offers a 6.5" CID screen instead of the 10.25" of the HU-H system. it is also connected to the headunit via an APIX line.

Vehicles with the Navigation Business system (SA606) are equipped as standard with a 7-button iDrive controller. The Touch controller is only available with the optional Navigation Professional (SA609).



Entry Navigation basic 7 button iDrive controller

In contrast to the Navigation Professional (SA609) user interface the Business Navigation system (SA606) only provides the most basic features.

The main menu is divided into eight selection menus:

- Multimedia
- Radio
- Telephone
- Navigation
- Office



# I01 Information and Communication

## 2. System Components

- ConnectedDrive
- Vehicle info
- Settings.



SA606 Business Navigation main menu on 6,5" screen

The Basic Headunit combines the following control units in one housing:

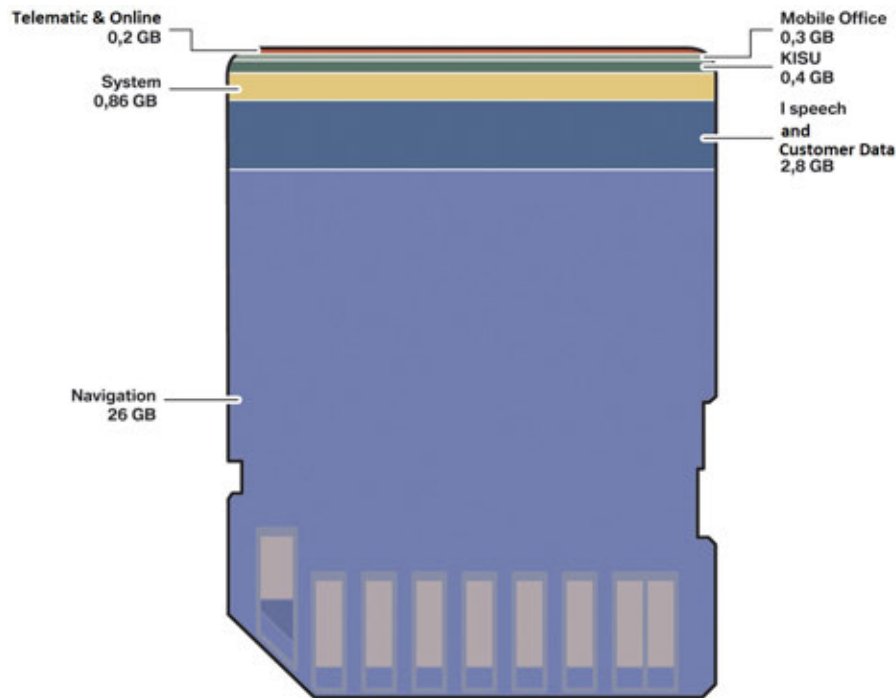
- Navigation computer (SA606 Navigation Business)
- Tuner (FM)
- DAB tuner (Not for US)
- IBOC decoder
- SDARS satellite tuner
- ASK
- MOST-CAN gateway (not used in the I01)
- APIX data cable for the central information display
- Headunit-supported telephone.

For the SA606 Navigation Business system, a non-removable (32 GB) flash memory is used to store the map data, contacts, customer data and system files.



# I01 Information and Communication

## 2. System Components



Symbolic representation of distribution of the non-removable (32 GB) flash memory in the Basic Headunit for SA606 Navigation Business

### 2.2. Headunit High

The Headunit High (known from other BMW models) is also available in the I01.

The telephone and multimedia functions are integrated in the Headunit High. A Combox is therefore also not required in the I01. The Telematic Communication Box (TCB) control unit is installed for telematics functions.

Additional information on the Headunit High can be found in the "ST1211 Headunit High" training material issued in March 2012 and available in ICP.



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**The I01 offers the Basic Headunit as standard equipment with SA606 Navigation Business and in the Headunit High with Navigation Professional (option 609) as optional equipment.**

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The Headunit High in the I01 does **not have a DVD drive** and could therefore be installed under the seat bench. The Headunit High is connected at the K-CAN4 and at the Body Domain Controller via Ethernet.

# I01 Information and Communication

## 2. System Components



Installation location of Headunit High in the I01

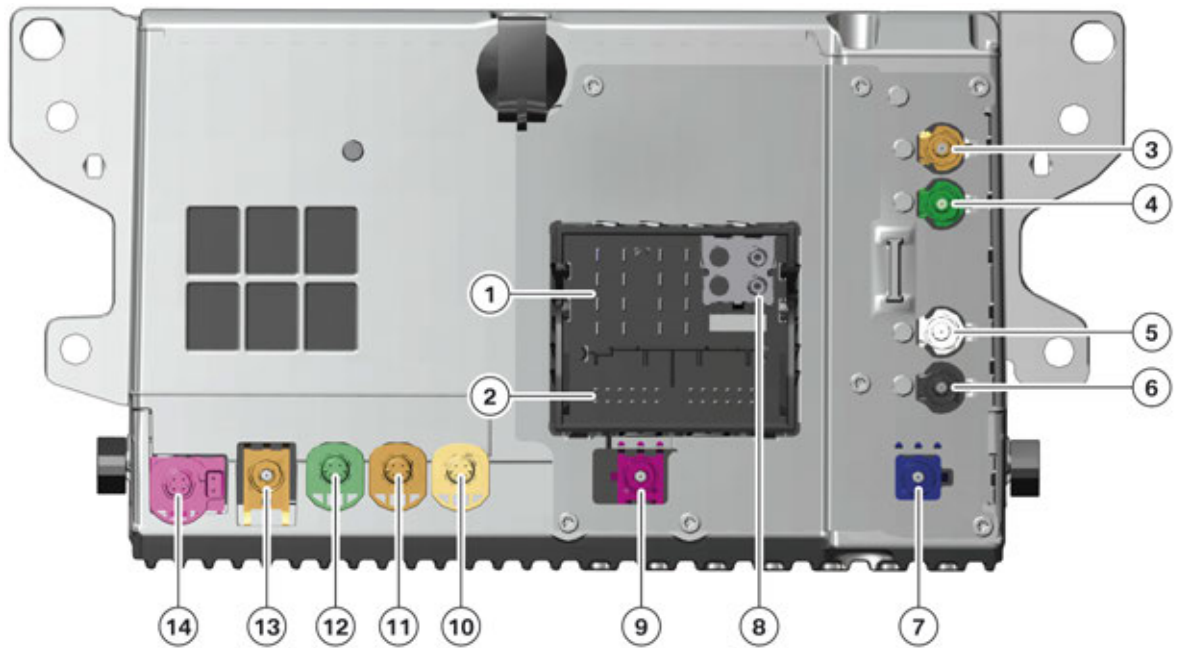
The Headunit High has a modular design. The key systems for communication are integrated as modules in the Headunit High. It includes the following components in a housing.

- 3 x tuner (FM)
- Frequency diversity module
- 2 x DAB tuner (L band and band III) **NOT for US**
- IBOC decoder (only US)
- SDARS satellite tuner (US only)
- Audio system controller
- Gateway
- Interface/Voltage supply CID (APIX).

### Rear view of Headunit High

# I01 Information and Communication

## 2. System Components



Rear view of Headunit High

TE13-0707

Index	Explanation
1	Contacts for speaker, telephone muting, K-CAN, voltage supply
2	Micro 1 and 2; Aux-In, FBAS 1 and 2
3	DAB band 3 antenna, color code curry (Not for US)
4	DAB L band antenna, color code green (Not for US)
5	FM2, color code white
6	FM1, color code black
7	GPS antenna, color code blue
8	Media Oriented System Transport bus (not used in the I01)
9	Preparation for WLAN antenna; color code burgundy
10	USB1 connection; customer access at AUX-In USB socket in the center console (also for data imports/exports); color code beige
11	USB2 connection; connection for customer smartphone via telephone base plate; color code curry
12	USB3 connection; Telematic Communication Box (TCB) color code light green
13	Bluetooth antenna connection; color code beige
14	Automotive Pixel Link connection and voltage supply of the central information display; color code violet

### Hard disk

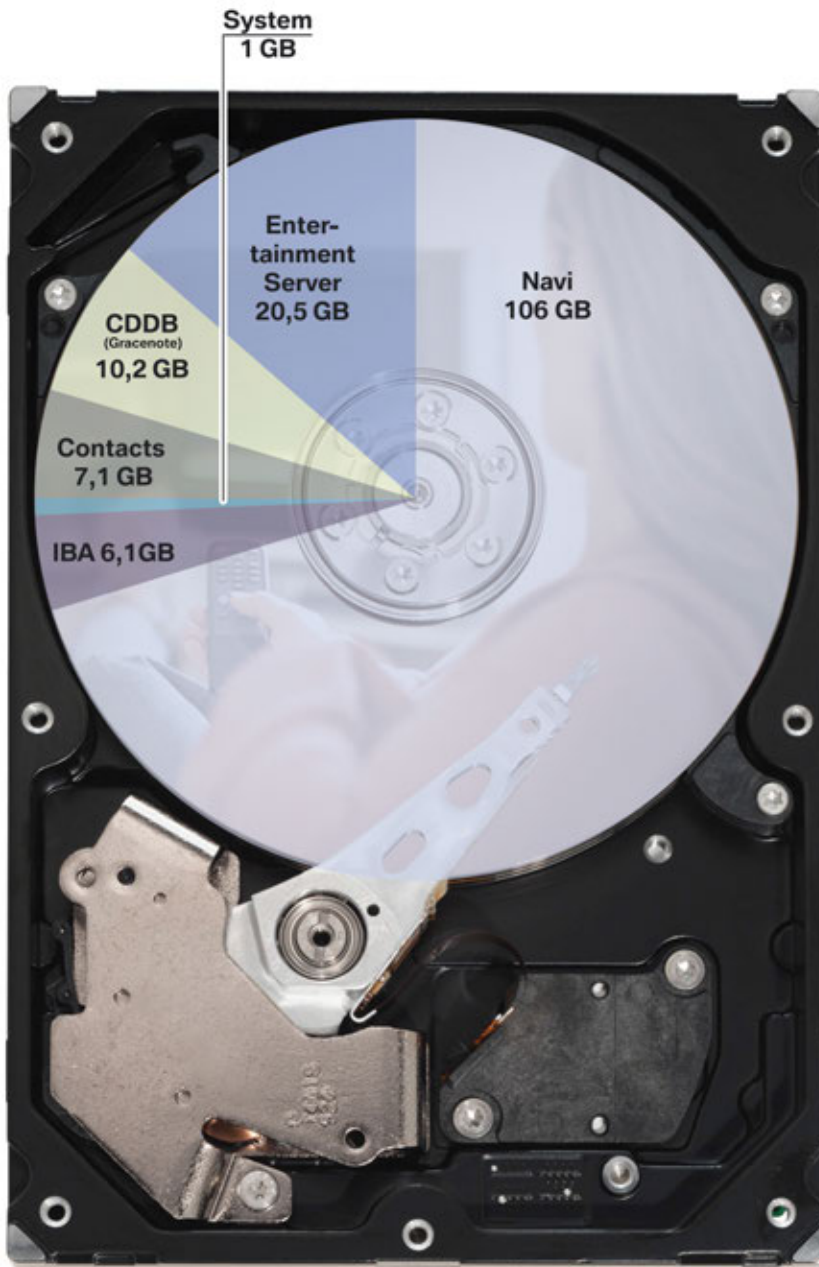
A hard disk with 200 GB is installed in the Headunit High.

# I01 Information and Communication

## 2. System Components

While the memory capacity remained the same for contact details and music collection, massive extensions were made to other areas. For example the memory capacity for navigation was increased by more than 40 GB to 106 GB. The integrated owner's manual (IBA) was increased from 4 GB to 6.1 GB and the Gracenote database from 5.1 GB to 10.2 GB.

The following graphic shows how the memory capacity is divided for the individual areas.



Partitioning of the hard disk in the Headunit High

### Integrated flash memory

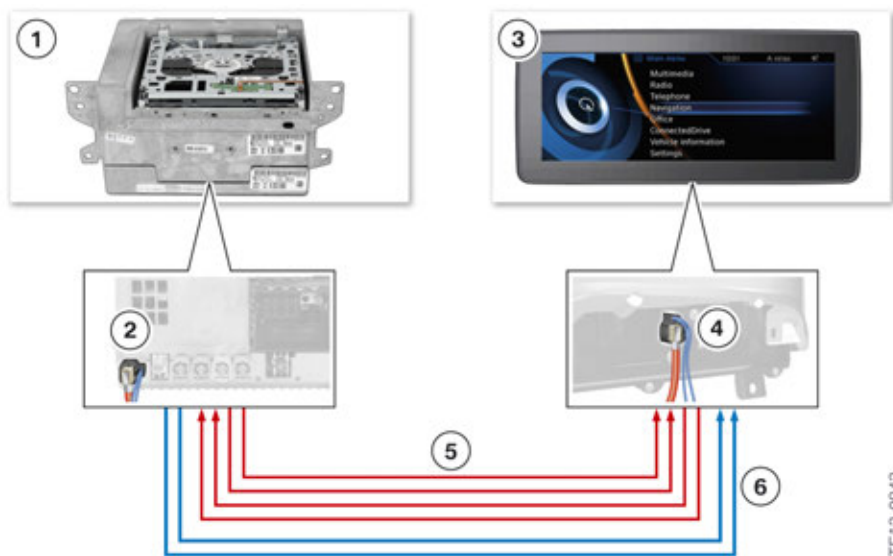
# I01 Information and Communication

## 2. System Components

To protect sensitive customer data such as "Address details" and "Settings" for example, a permanently integrated flash memory was housed in the Headunit High. The data here is protected much better than on a hard disk against external influences. The integrated flash memory is permanently installed and cannot be replaced separately.

### Displays and operating elements

The central information display CID has no separate bus connection in conjunction with the Headunit High. The CID is directly connected to the headunit via an APIX data line.



APIX data line from Headunit High to CID

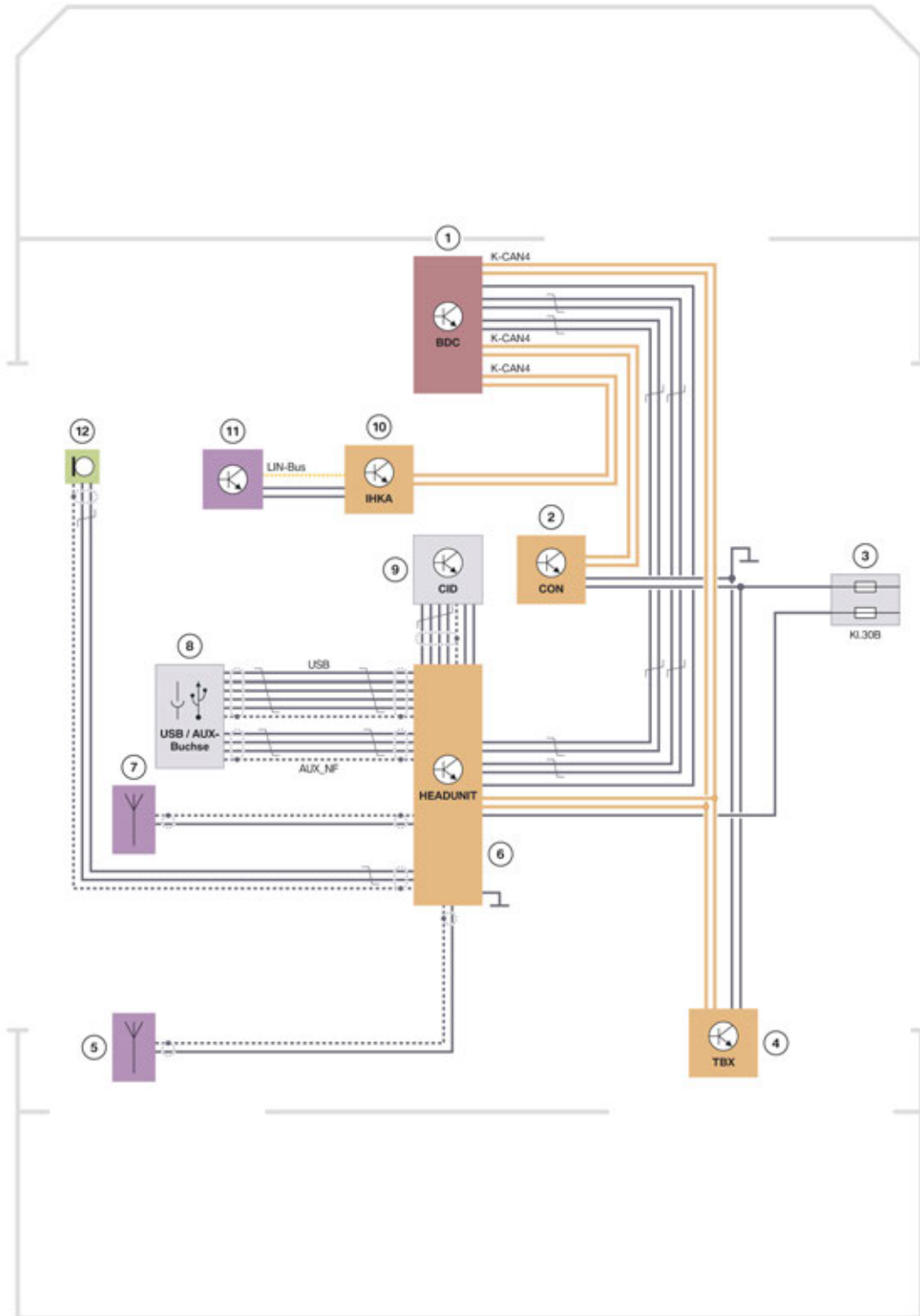
Index	Explanation
1	Headunit
2	Connection for output of video signal APIX at the Headunit High
3	Central information display (CID)
4	Connection for input of video signal APIX at the CID
5	APIX data connection lines
6	Power supply for CID via Headunit High

APIX (Automotive Pixel Link) is a bit-serial data transfer system with a data transfer rate of 1 Gbit/s on just one copper core pair. Each APIX data channel also has a bidirectional reverse channel. This reverse channel is used for transmitting status information (e.g. operating temperature of the CID), diagnosis information and control signals. Data transfer via the APIX data line has been optimized with regard to electromagnetic compatibility and power consumption. Because of the CID's low power consumption, the CID can be supplied with power via two separate current lines directly by the Headunit High, and there is no need for a separate power supply to the CID. The two copper core pairs and the two power supply leads are connected by a common connector to the headunit and the CID. Because of the high data transfer rate with low electromagnetic emissions, it is also possible to use copper wiring for applications with a high bandwidth requirement and to dispense with fiber optic networking.

# I01 Information and Communication

## 2. System Components

### 2.2.1. System wiring diagram for Headunit High



TE13-0706

System wiring diagram for Headunit High

# I01 Information and Communication

## 2. System Components

Index	Explanation
1	Body Domain Controller (BDC)
2	Controller (CON)
3	Fuses
4	Telematic Communication Box (TCB)
5	GPS antenna (integrated in the roof-mounted antenna)
6	Headunit
7	Bluetooth antenna
8	AUX-In connection with integrated USB audio interface
9	Central information display (CID)
10	Integrated automatic heating / air-conditioning (IHKA)
11	Combined audio and heating and air-conditioning controls
12	Microphone

### 2.3. External devices

#### AUX-IN connection with USB interface

The interface for USB audio/video and customer data import/export is located at the **center console**. This connection is then used both to play external media and for data import/export such as when updating navigation data for example.



AUX-In connection with integrated USB audio interface

Index	Explanation
1	Cigarette lighter socket / power socket
2	AUX-In connection with integrated USB audio interface



# I01 Information and Communication

## 2. System Components

### 2.4. Telephone systems

In the I01 two telephone systems are used in conjunction with the Headunit High.

- Basic version of telephone with hands-free system and USB interface (included in the standard equipment).
- Enhanced USB and Bluetooth plus Smartphone Integration (Comfort telephone option 6NS)

The telephone functions in the I01 are implemented for the basic telephone version with hands-free system and USB interface and for the optional equipment Enhanced USB and Bluetooth plus Smartphone Integration (Comfort telephone option 6NS) in the headunit.

In the basic version with hands-free system and USB interface the basic telephone functions of the Headunit High are provided with a reduced range of functions. For the first time with the basic telephone system the album covers, if embedded in the music tracks, are now shown on the central information display (CID). Extended functions of cell phone preparation with connection to Bluetooth devices (e.g. Bluetooth audio, Office, etc.) are not provided. The basic telephone system includes a hands-free system without cell phone charger (base plate) and without a vehicle external antenna.

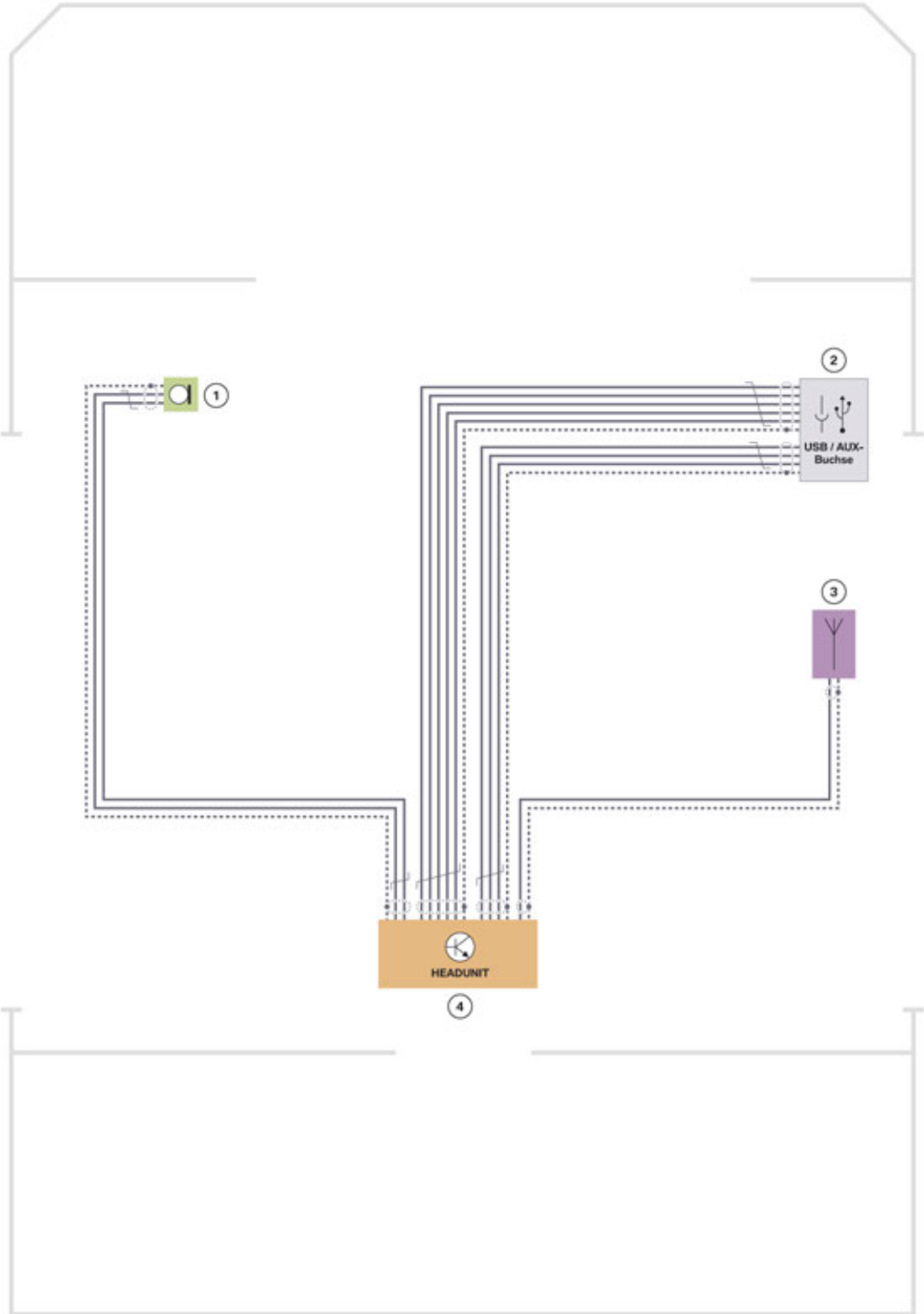
The "Enhanced USB and Bluetooth plus Smartphone Integration" (Comfort telephone option 6NS) package includes:

- A hands-free system, with which the Bluetooth-compatible cell phones communicate wirelessly with the vehicle.
- A base plate, for which suitable snap-in adapters are offered for recommended cell phones and sold separately. The cell phone is charged via the snap-in adapter and offers a connection to the vehicle's outside (roof) antenna for better reception. The base plate also includes a USB connection, which enables the audio playback from the smartphone via the headunit.
- A USB audio interface facilitates the connection of an enabled MP3 player, Apple® iPod® or USB stick. The audio files or video files can be streamed from the USB stick to the Headunit High (HU-H). Then the headunit of the vehicle can play the audio files (also audio books, podcasts) and video files and display these files on the central information display (CID). Details on the possible playback information can be found in the "ST1211 Headunit High" training material issued in March 2012 and found on ICP.
- Operation via specific operating elements (iDrive controller, favorite button, multifunction for steering wheel or voice processing system) of the vehicle.
- The Office function with the screen mask of organizer content from the cell phone in the form of emails, SMS text messages and a calendar, which are shown on the central information display under the menu item "Office". The screen mask of contact photos from the address book of the cell phone is also shown on the CID. Data from the address book of the connected telephone and address data which was saved permanently in the vehicle are shown at the same time.
- Audio streaming per Bluetooth from cell phone.
- Playing of music tracks of the cell phone from the base plate with simultaneous display of album covers if music track is embedded.
- Driver update for multimedia and telephone system via USB interface (customer-initiated software update, also called KISA/KISU **is not yet available in the US market**).

# I01 Information and Communication

## 2. System Components

### 2.4.1. System wiring diagrams



System wiring diagram for basic telephone system with hands-free system and USB interface

TE13-0931

# I01 Information and Communication

## 2. System Components

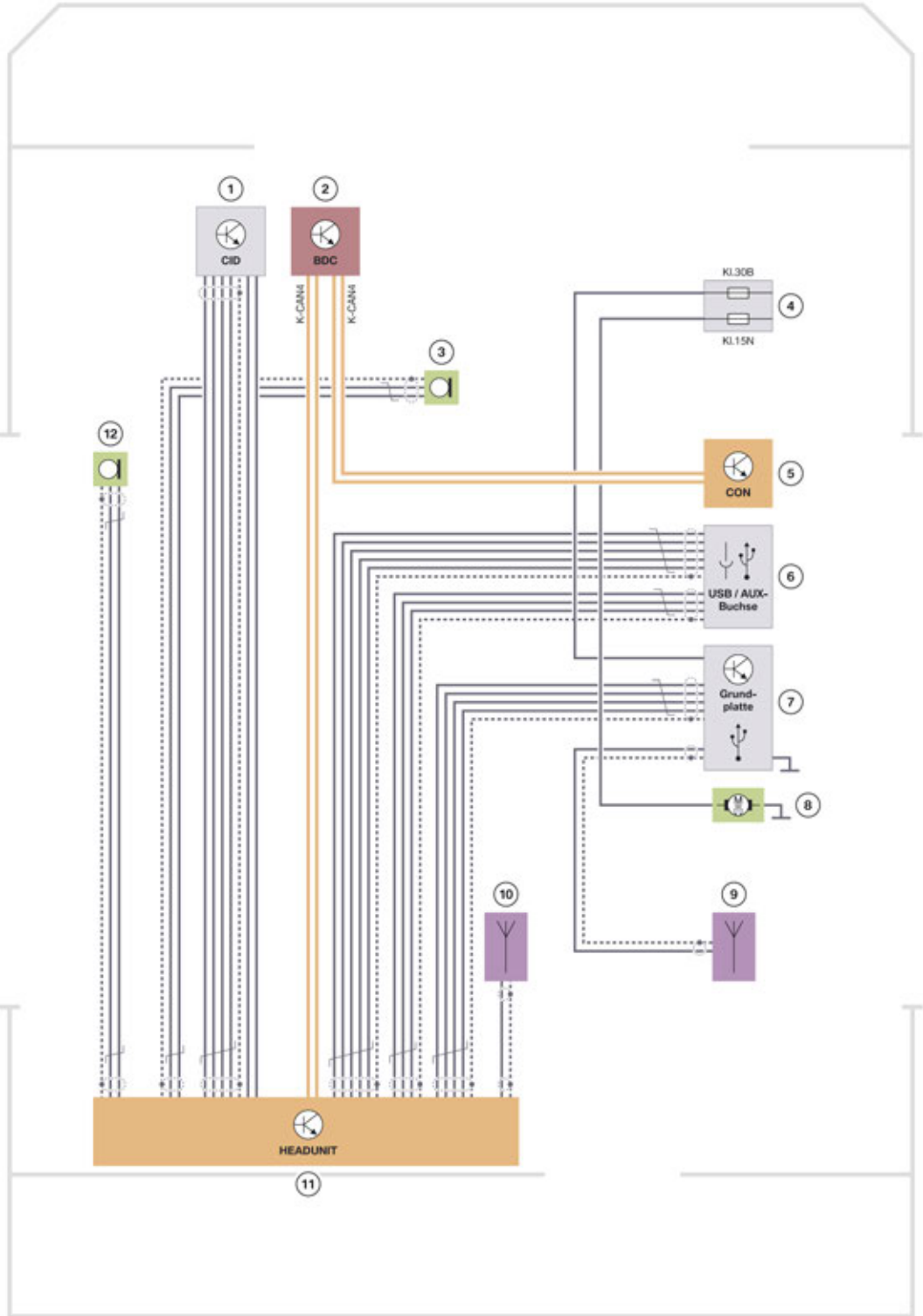
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<b>Index</b>	<b>Explanation</b>
1	Microphone, driver's side
2	AUX-In connection with integrated USB audio interface
3	Bluetooth antenna
4	Headunit

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# I01 Information and Communication

## 2. System Components



System wiring diagram for Comfort telephone with extended smartphone connection

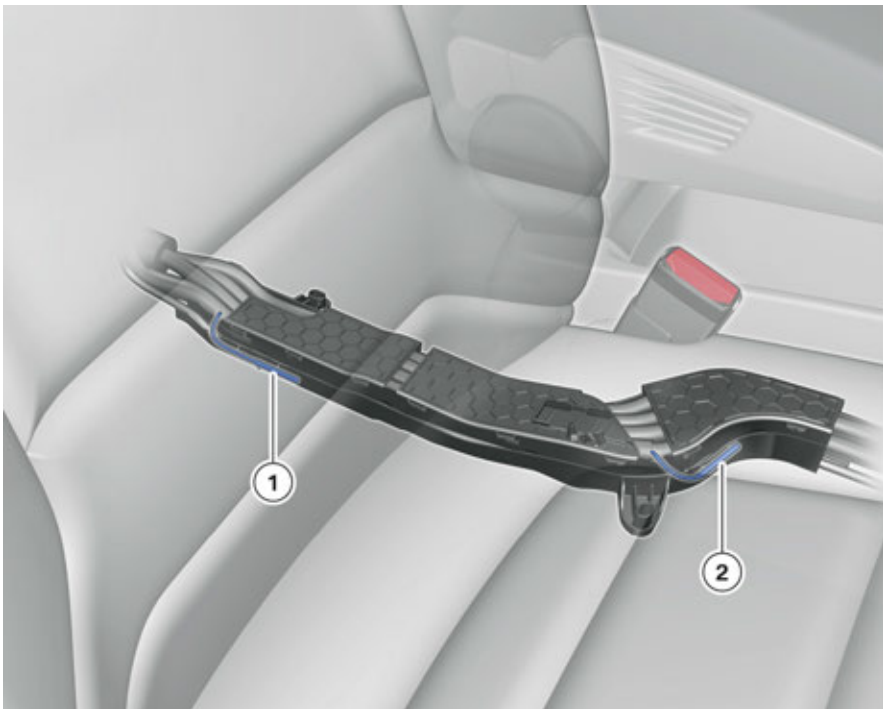
TE13-0932

# I01 Information and Communication

## 2. System Components

Index	Explanation
1	Central information display (CID)
2	Body Domain Controller (BDC)
3	Microphone, front passenger side
4	Fuse
5	Controller (CON)
6	AUX-In connection with integrated USB audio interface
7	Base plate
8	Fan
9	Telephone antenna (integrated in roof-mounted antenna)
10	Bluetooth antenna
11	Headunit
12	Microphone, driver's side

The Bluetooth antenna is located in the audio wiring harness of the I01.



Installation location of Bluetooth and WLAN antenna

Index	Explanation
1	Bluetooth antenna
2	WLAN antenna

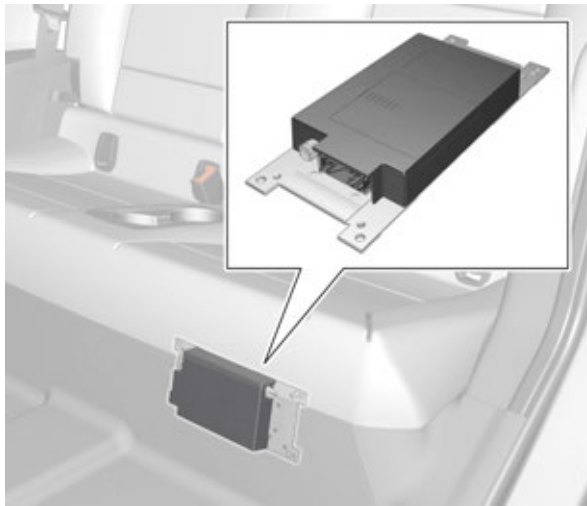
A WLAN antenna is also attached to the audio wiring harness but is not used at the moment.

# I01 Information and Communication

## 2. System Components

### 2.5. Telematic Communication Box

The Telematic Communication Box (TCB) is a permanently installed speech and data modem for the Headunit High. As there is automatic activation upon series launch, the I01 already has a Telematic Communication Box (TCB) in the basic equipment.



Telematic Communication Box (TCB)

The transmission standard of the Telematic Communication Box (TCB) is specified in the HSPA standard with 14.4 mbit/s. HSPA "High Speed Packet Access" is an extension of the mobile radio standard UMTS, which enables higher data transfer rates.

As most interfaces and functions of Combox Media are moved to the Headunit High (hands-free mode, USB interfaces, speech processing, Bluetooth audio, Office, contacts, etc.), the Telematic Communication Box is required for the following functions:

- BMW Assist with eCall (emergency-call function)
- BMW Online
- BMW Internet using a SIM card integrated in the vehicle (P-SIM)
- Remote functions (reception and controller)
- "Text-to-speech" function in Office area
- BMW TeleServices via P-SIM
- Transmission of last vehicle position (GPS tracking)
- Transmission of vehicle data

The transmission of the vehicle position (GPS tracking) and the vehicle data to the BMW back-end is carried out by the Telematic Communication Box (TCB). In addition to the last vehicle position, vehicle condition data, for example the state of charge of the high-voltage battery, is also transmitted. This is required for apps, amongst other things.

The customer has the option of integrating "GPS tracking" in the Settings menu using a controller. When "GPS tracking" is deactivated the data cannot be updated and the Remote Services are only available to a limited extent.

# I01 Information and Communication

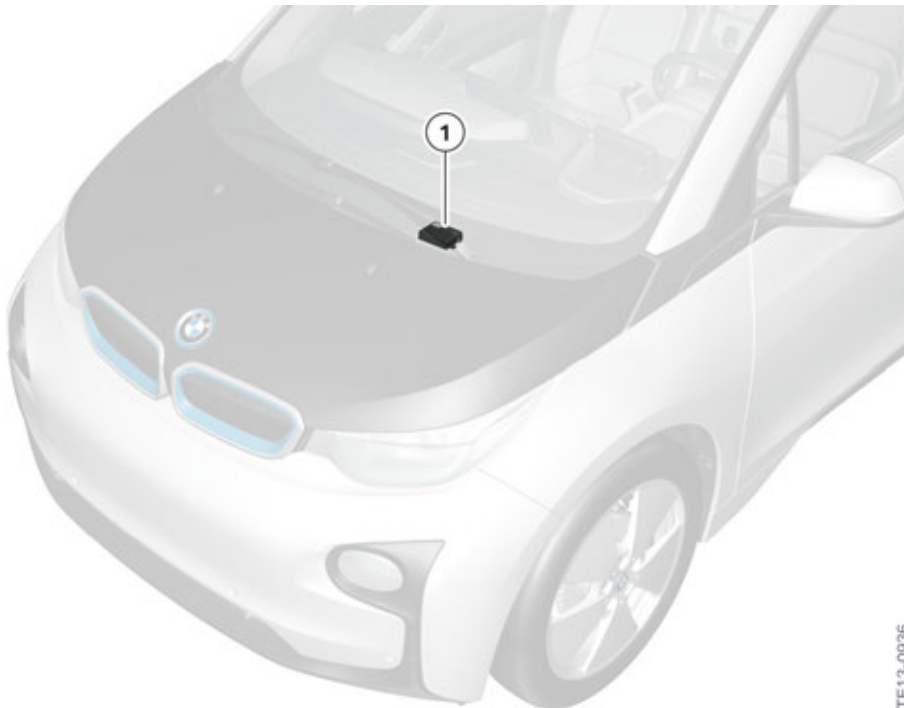
## 2. System Components



GPS tracking

Index	Explanation
1	GPS tracking menu
2	Activate/Deactivate GPS position

The TCB is always connected to two cell phone antennas. The roof antenna is for the telematics functions of the vehicle. The second antenna (back-up antenna) should function as an emergency-call antenna in the event of a rollover.



Installation location of back-up antenna

Index	Explanation
1	Back-up antenna



# I01 Information and Communication

## 2. System Components

The emergency-call function involves sending the data package, as well as setting up a voice contact from the vehicle to the emergency call center. The TCB is equipped with an additional battery, whose function is guaranteed independent of the vehicle electrical system. Thus even in the event of an accident with an interruption to the voltage supply (destruction of battery, power distribution box or wiring) an automatic emergency call can still be placed.

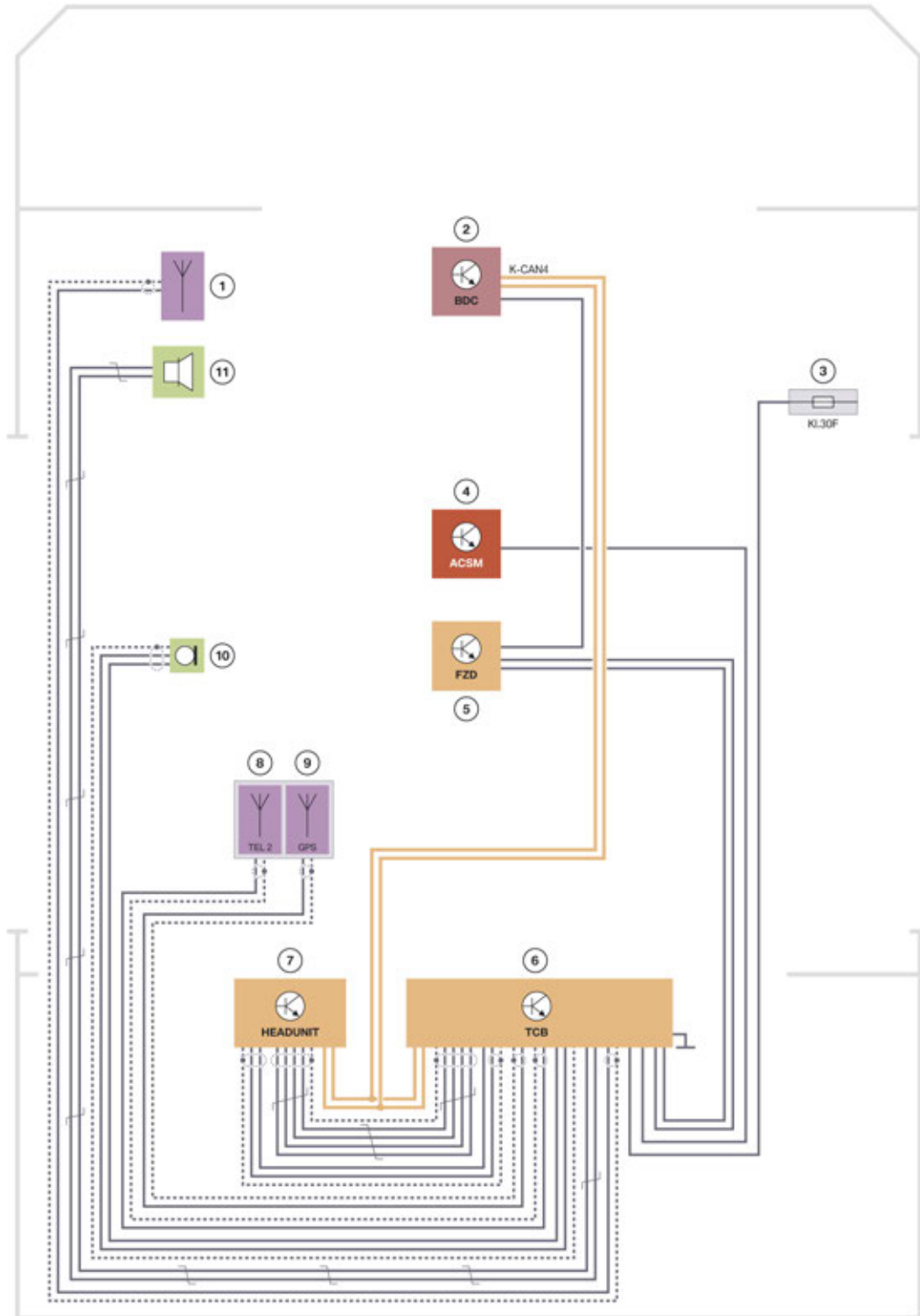


Telematic Communication Box (TCB)

The Telematic Communication Box is connected at the K-CAN4 and via USB at the headunit.

# I01 Information and Communication

## 2. System Components



TE13-0930

System wiring diagram for Telematic Communication Box (TCB)

# I01 Information and Communication

## 2. System Components

Index	Explanation
1	Back-up antenna
2	Body Domain Controller (BDC)
3	Fuse
4	Advanced Crash Safety Module (ACSM)
5	Roof function center (FZD)
6	Telematic Communication Box (TCB)
7	Headunit
8	Telephone antenna (integrated in the roof-mounted antenna)
9	GPS antenna (integrated in the roof-mounted antenna)
10	Microphone (depending on the telephone equipment one or two microphones are used)
11	SOS speaker

### 2.6. Touch Controller

The controller introduced with the headunit CIC High with rotary adjuster/knob and seven keys is replaced in the BMW 5-Series LCI worldwide with a touch controller with an additional touch control panel at the top at the rotary adjuster/knob. The I01 also has the touch controller from series launch.



Touch Controller

# I01 Information and Communication

## 2. System Components



Touch Controller ECE / US

TE13-0870



Touch Controller Asia

TE13-0880

The controller with touchpad is connected at the K-CAN4.

The customer has the option of configuring the touchpad in the Settings menu using a controller.



Touchpad settings

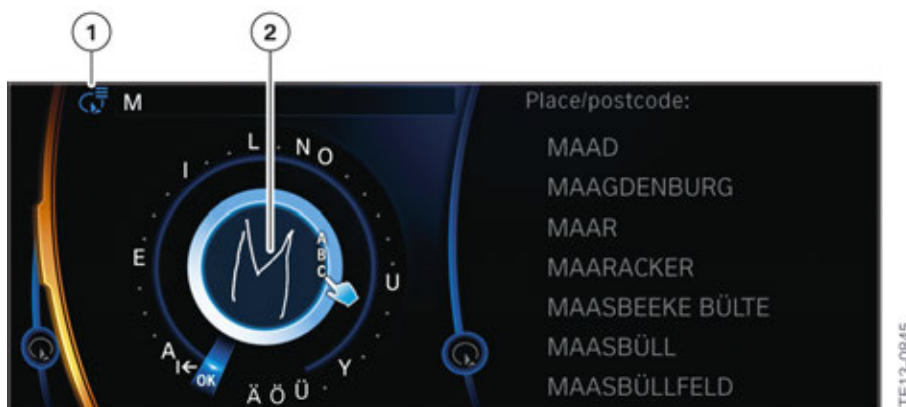
TE13-0877

# I01 Information and Communication

## 2. System Components

Index	Explanation
1	"Settings" menu
2	"Touchpad" submenu
3	Acoustic acknowledgement
4	Card
5	Wordmatch principle

In the touch control panel of the controller the customer can input location information for the navigation system or telephone numbers and contact details. In the map operation the map section for example can be moved and enlarged or reduced by finger movement. Using the touch control panel the mouse pointer can also be moved for the Internet function.



Input via touchpad display in the CID

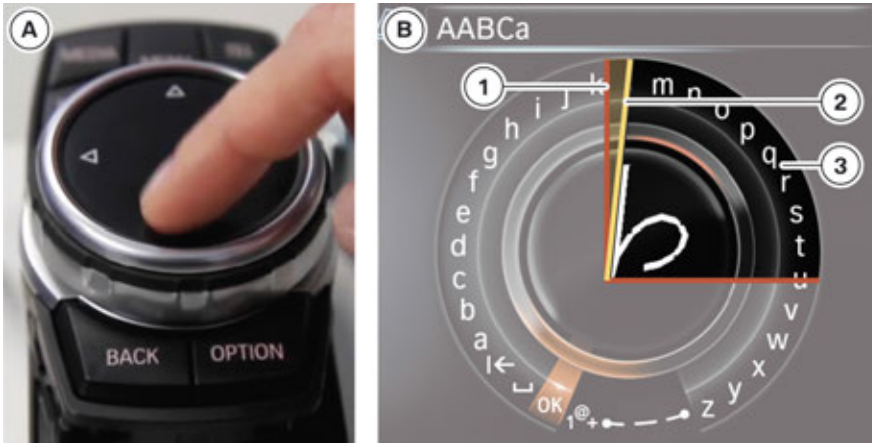
Index	Explanation
1	Feedback from system what letter was recognized
2	Input of letter "M" by means of touch control panel

The touch controller also supports nine gestures in the I01 with the input. This means that it is now possible to adjust controller settings in the central information display (CID) by lateral movements on the touchpad.

The gesture input can now also be used for other functions such as the operation of the Internet. Characters entered using the wordmatch principle are now also recognized with an input at an angle between 0° and 90°.

# I01 Information and Communication

## 2. System Components



Angular range of input using wordmatch principle with touchpad

Index	Explanation
A	Input using controller with touchpad
B	Displays in CID
1	Edge of angular range for input
2	"Angle" of input
3	Angular range for input

### Touch box control unit

For the evaluation of inputs an additional control unit "Touchbox" is used in separate national-market versions.



Touchbox (TBX) control unit

The Touchbox control unit is required for interpreting the contact sensors of the touch controller for the Headunit High user interface. The Touchbox (TBX) is connected to the controller and Headunit High via the K-CAN4.

# I01 Information and Communication

## 2. System Components

### 2.7. Speaker systems

#### Overview

The speaker systems in the I01 are available in two specification levels:

- Stereo system (standard)
- Harman Kardon® HiFi Premium sound system (option 674).

The following table gives an overview of the possible speaker systems in the I01.

<b>Stereo system</b>	<b>Harman Kardon® HiFi Premium sound system</b>
Activation by headunit (4 x 25 W) 4 speakers	7-channel AMPH (360 W) 12 speakers

In the I01 no central bass concept is used.

The speakers were optimized in terms of weight in both versions. The weight saving in comparison to a speaker system in the F22 is about 1150 g. This was achieved not only through the reduction of the speakers, but also by a weight reduction of the individual speaker components. For example, for the Harman Kardon® HiFi Premium sound system (option 674) neodymium is used as a light magnetic material.

#### 2.7.1. Stereo system

The stereo system gets by without additional amplifiers and uses the headunit's speaker outputs.

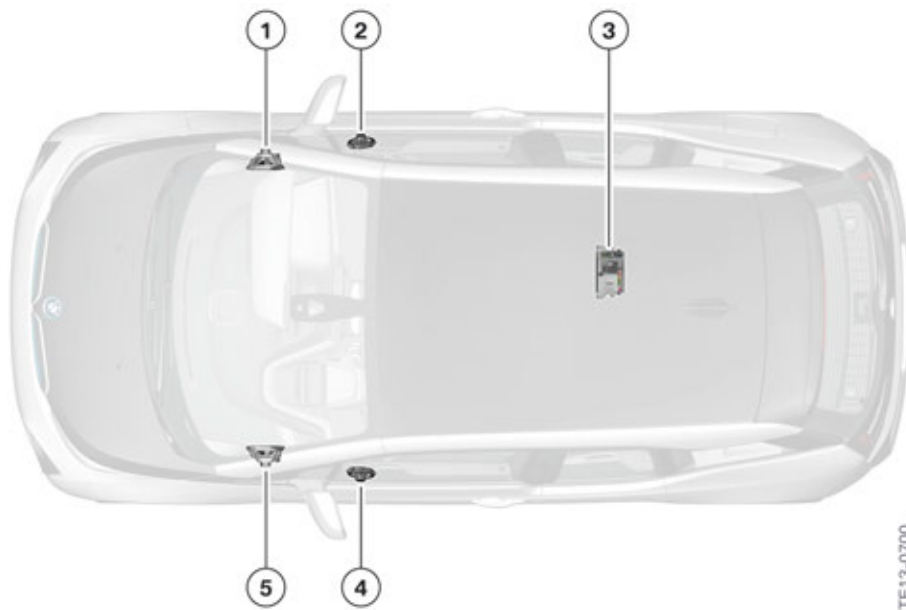
In the I01 a total of four speakers are used in the stereo system. These are activated via four channels from the headunit.

The graphic below shows the speakers of the stereo system. All speakers are operated by the integral amplifier in the headunit at a power rating of 4 x 25 watts.



# I01 Information and Communication

## 2. System Components



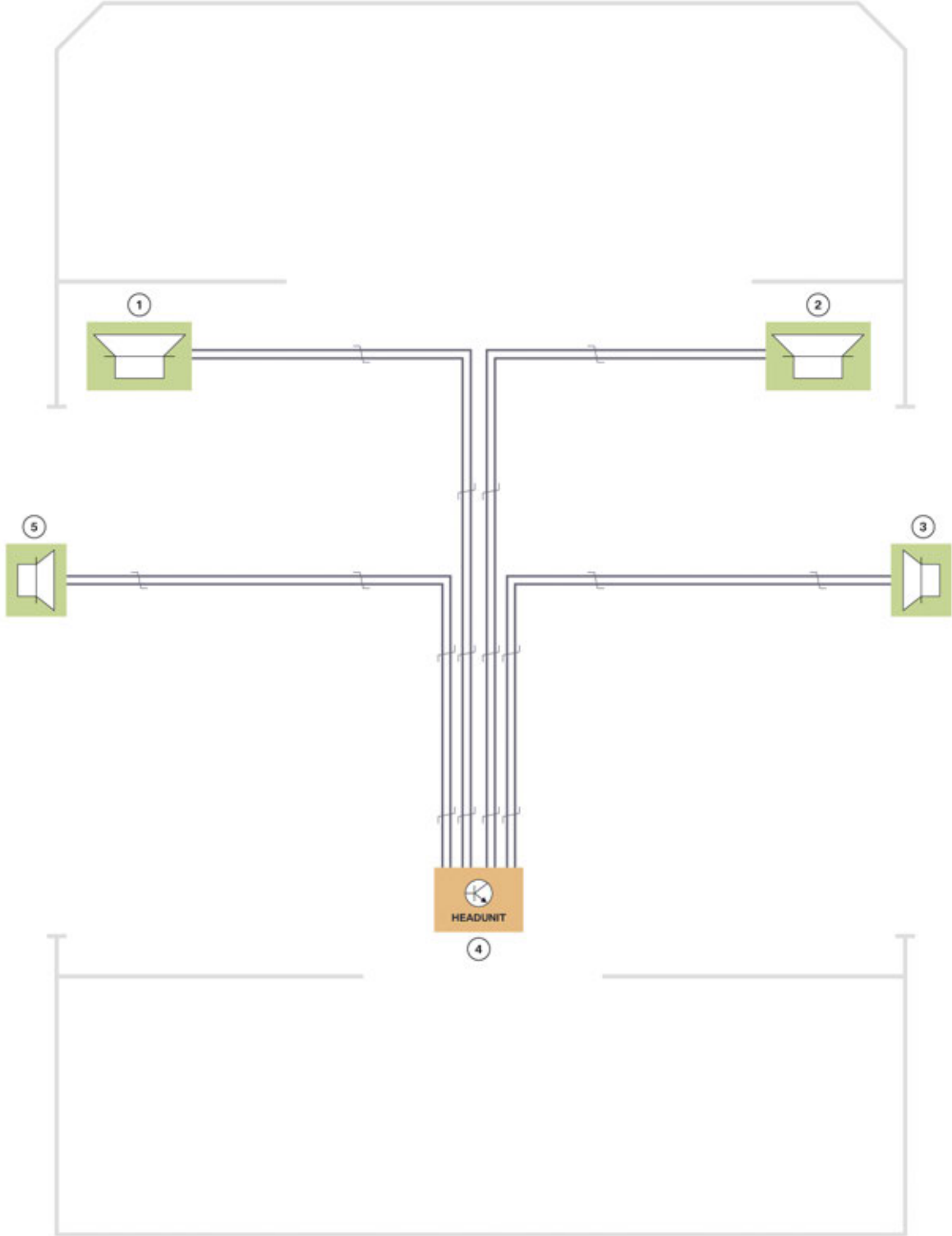
Overview of stereo speaker system

Index	Explanation
1	Bass speaker, A-pillar, bottom right
2	Mid-range speaker, front right door
3	Headunit
4	Mid-range speaker, front left door
5	Bass speaker, A-pillar, bottom left

# I01 Information and Communication

## 2. System Components

System wiring diagram for stereo system



System wiring diagram for stereo system

TE13-0702

# I01 Information and Communication

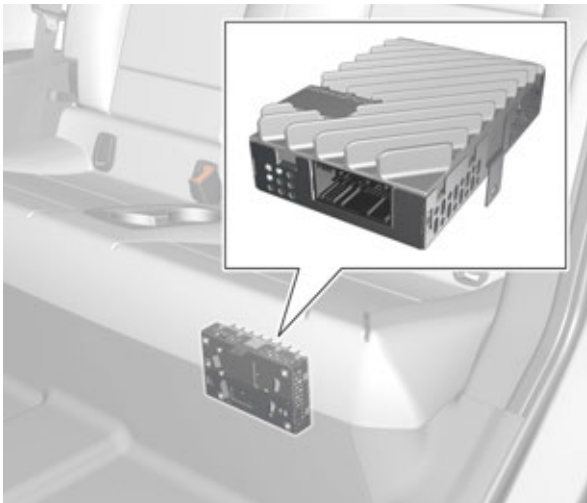
## 2. System Components

Index	Explanation
1	Bass speaker, A-pillar, bottom left
2	Bass speaker, A-pillar, bottom right
3	Mid-range speaker, front right door
4	Headunit
5	Mid-range speaker, front left door

### 2.7.2. HiFi system

The Harman Kardon® HiFi Premium sound system (option 674) consists of twelve speakers. Separate speakers are installed in the Harman Kardon® HiFi Premium sound system for the tweeter and mid-tone ranges.

A seven-channel amplifier with digital equalizing is integrated in the Harman Kardon® HiFi Premium sound system.



Amplifier of Harman Kardon® (option 674) HiFi Premium sound system

The audio amplifier (AMP) of the Harman Kardon® HiFi Premium sound system is a bus user in the K-CAN4.

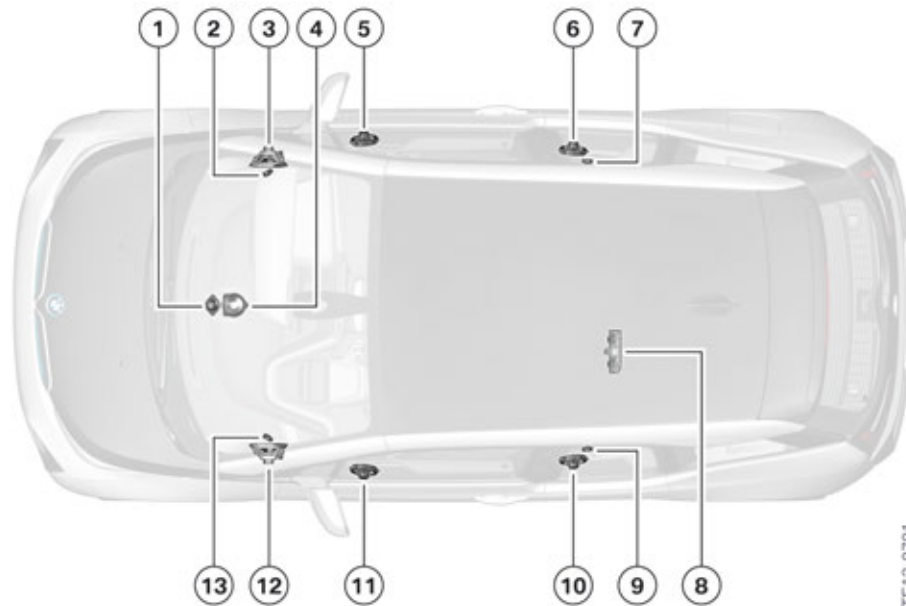
The mid-range speakers and tweeters of the Harman Kardon® HiFi Premium sound system have high-quality diaphragms for a clearly differentiated sound pattern. The tweeters have aluminium membranes and the mid-range speakers are ALumaprene speakers®.

The diaphragms and magnetic systems in ALumaprene speakers® are differentiated by their larger dynamics and increased efficiency in comparison to conventional speakers. ALumaprene speakers® are therefore a further key step in the direction of energy-saving speakers, which do not compromise on the performance. In addition, ALumaprene speakers® also boast the same excellent properties of speakers made from woven aramide fiber diaphragms, but are made from a specially developed polymer of the latest generation. The particularly light modules have excellent damping properties, which limit resonances to a minimum. This enables a particularly well-controlled frequency response, which can only be achieved with high-end sound transducers.

# I01 Information and Communication

## 2. System Components

The speakers and the amplifier of the Harman Kardon® HiFi Premium sound system (option 674) are illustrated in the following graphic. The speakers are operated at a power output of 5 x 40 watts for the mid-range speakers and tweeters and 2 x 80 watts for the bass speakers.



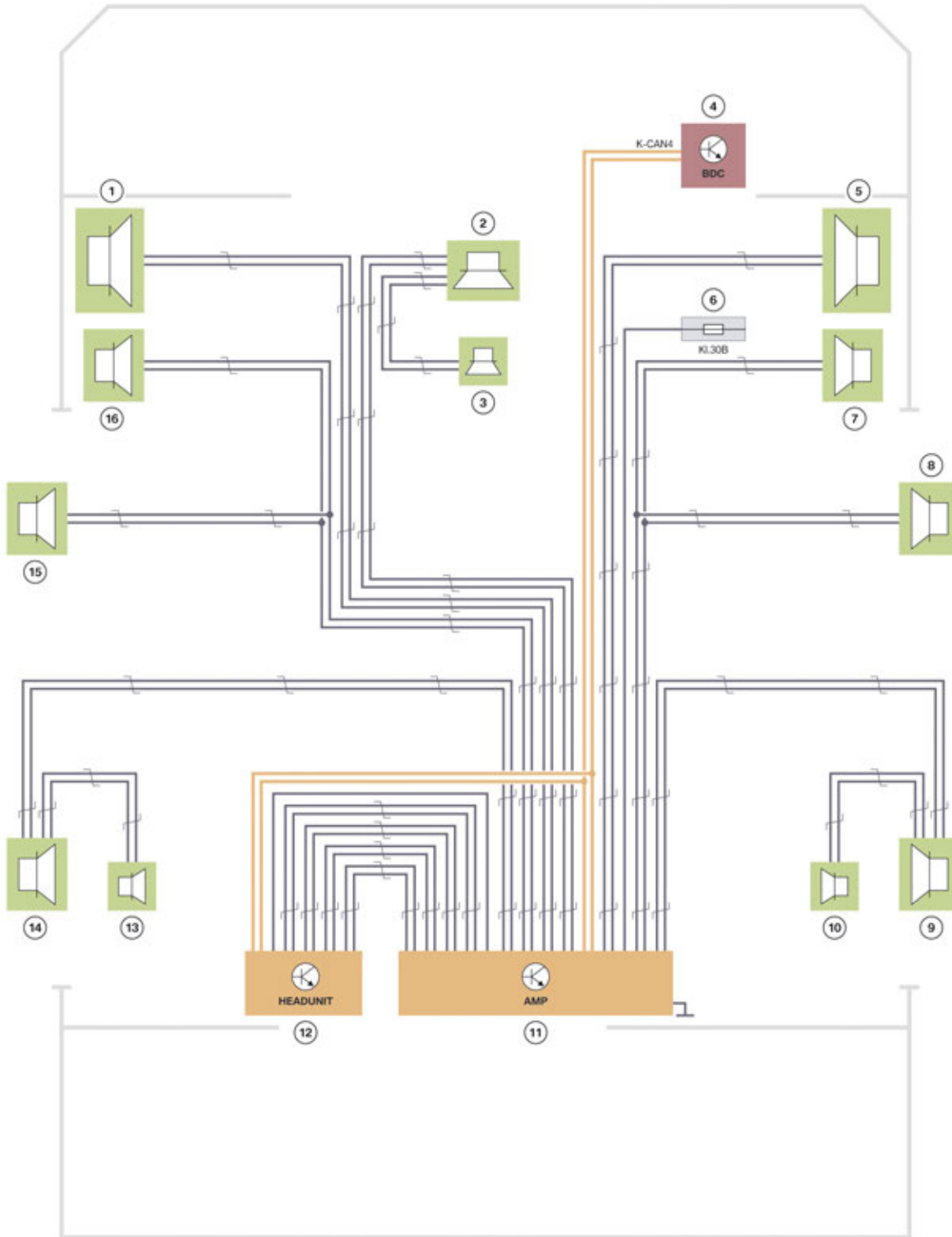
Overview of HiFi Premium sound system

Index	Explanation
1	Tweeter, dashboard center
2	Tweeter, A-pillar, top right
3	Bass speaker, A-pillar, bottom right
4	Mid-range speaker, dashboard center
5	Mid-range speaker, front right door
6	Mid-range speaker, rear right door
7	Tweeter, rear right door
8	Hi-fi amplifier (Harman Kardon®)
9	Tweeter, rear left door
10	Mid-range speaker, rear left door
11	Mid-range speaker, front left door
12	Bass speaker, A-pillar, bottom left
13	Tweeter, A-pillar, top left

# I01 Information and Communication

## 2. System Components

System wiring diagram for HiFi Premium sound system



TE13-0703

System wiring diagram for HiFi Premium sound system

# I01 Information and Communication

## 2. System Components

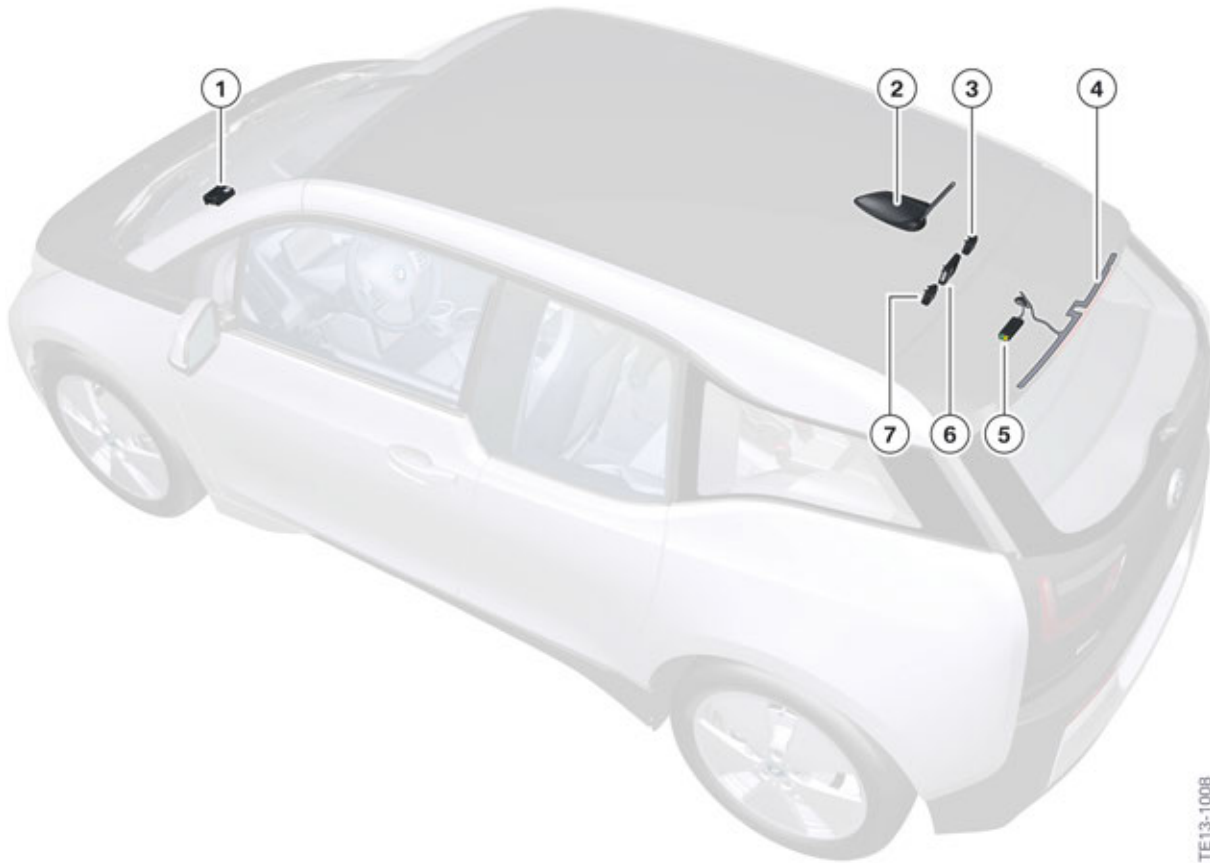
Index	Explanation
1	Bass speaker, A-pillar, bottom left
2	Mid-range speaker, dashboard center
3	Tweeter, dashboard center
4	Body Domain Controller
5	Bass speaker, A-pillar, bottom right
6	Fuse
7	Mid-range speaker, front right door
8	Tweeter, A-pillar, top right
9	Mid-range speaker, rear right door
10	Tweeter, rear right door
11	Hi-fi amplifier (Harman Kardon®)
12	Headunit
13	Tweeter, rear left door
14	Mid-range speaker, rear left door
15	Tweeter, A-pillar, top left
16	Mid-range speaker, front left door

### 2.8. Antenna systems

The following graphic provides an overview of the antenna system components.

# I01 Information and Communication

## 2. System Components



Overview of antennas

Index	Explanation
1	Back-up antenna
2	FM1, telephone antennas, GPS and DAB-L frequency range (integrated in the roof-mounted antenna) <b>(DAB-L is Not for US)</b>
3	Wave trap
4	Antenna sensor for FM2 and DAB band 3 <b>(DAB is Not for US)</b>
5	Antenna amplifier for FM and DAB band 3 <b>(DAB is Not for US)</b>
6	Interference suppression filter
7	Wave trap

The antennas for mobile radio, GPS, FM1 and DAB-L band **(DAB-L is Not for US)** are integrated in the roof-mounted antenna.

Another FM antenna is realized not as before by an antenna field inserted in the rear window, but by an antenna sensor attached to the rear window. The antenna amplifier is located in the tailgate.

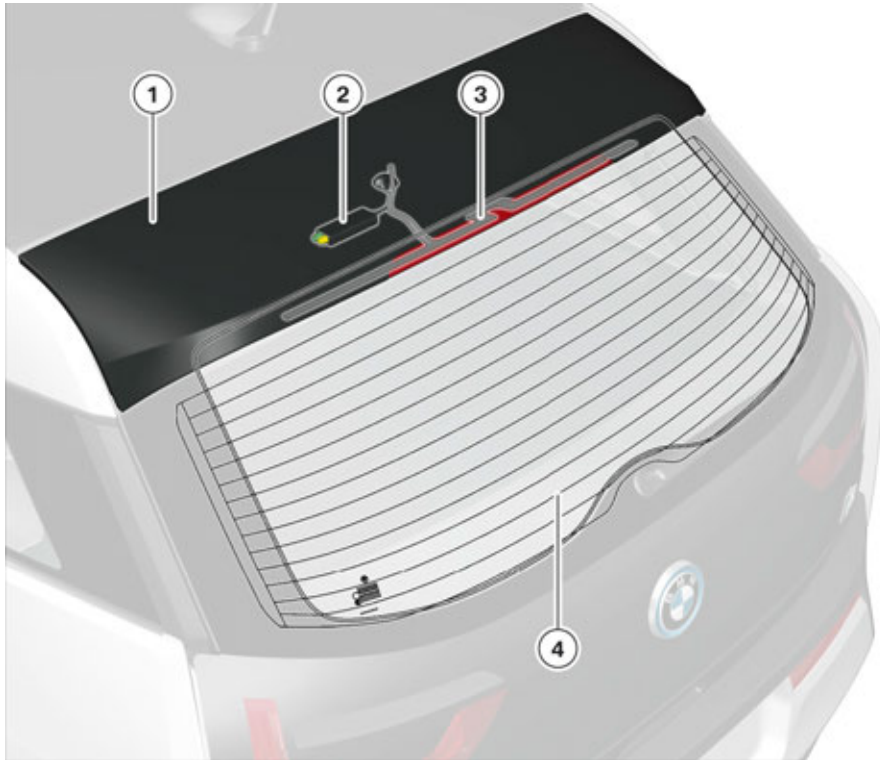
**As a result of the combination of the carbon fiber body in conjunction with the electric motor and the associated EMC interference AM radio is not offered in the I01.**

The following graphic shows the installation location of the antenna sensor.



# I01 Information and Communication

## 2. System Components



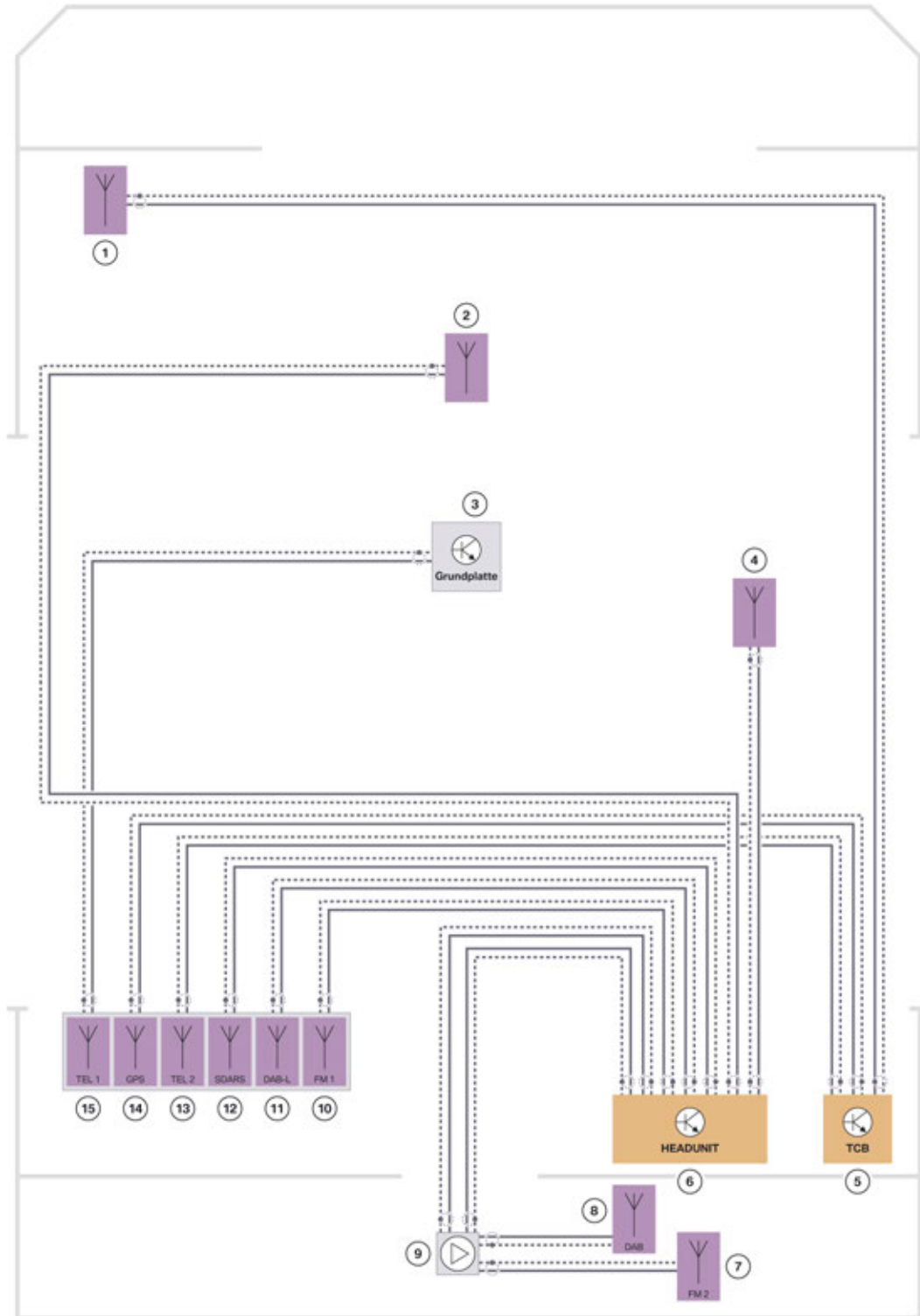
Antenna amplifier with antenna sensor

Index	Explanation
1	Rear spoiler
2	Antenna amplifier for FM and DAB band 3 ( <b>DAB is Not for US</b> )
3	Antenna sensor for FM2 and DAB band 3 ( <b>DAB is Not for US</b> )
4	Heated area for heated rear window

While the left area of the antenna sensor is used for DAB band 3 (**DAB is Not for US**), the right area of the sensor is used for FM2.

# I01 Information and Communication

## 2. System Components



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System wiring diagram for antenna systems

# I01 Information and Communication

## 2. System Components

Index	Explanation
1	Emergency call antenna for eCall
2	VICS antenna (Only Japan)
3	Base plate
4	Bluetooth antenna integrated in the audio wiring harness
5	Telematic Communication Box (TCB)
6	Headunit
7	FM2 antenna (antenna sensor)
8	DAB band 3 antenna (antenna sensor)
9	Antenna amplifier for FM and DAB band 3 <b>(DAB is Not for US)</b>
10	Antenna FM1 (integrated in the roof-mounted antenna)
11	DAB-L antenna (integrated in the roof-mounted antenna) <b>(DAB is Not for US)</b>
12	SDARS antenna
13	Telephone antenna 2 (integrated in roof-mounted antenna)
14	GPS antenna (integrated in roof-mounted antenna)
15	Telephone antenna 1 (integrated in roof-mounted antenna)

# I01 Information and Communication

## 3. Functions

### 3.1. Display and operating concept

The familiar user interface of the iDrive was adapted to the requirements of the I01 and the design was revised.

The following schematic diagrams show a comparison of the main menu of BMW and BMW i:

#### Main menu of Headunit High BMW



Main menu of Headunit High BMW

#### Main menu of Headunit High BMW i



Main menu of Headunit High BMW i

#### Integrated owner's manual (IBA)

The integrated owner's manual (IBA) known from other BMW models are also available in the I01. A variety of IBA animations are also implemented here. The customer has the option of activating or deactivating the audio playback during IBA animations using the volume control button.

### 3.2. BMW i specific navigation

The Headunit High is activated automatically in the I01 upon series launch. The I01 in the basic equipment therefore has the optional equipment Navigation Professional (option 609), which was customized to the specific requirements of electric mobility.

# I01 Information and Communication

## 3. Functions



Main menu of the navigation system

A dynamic range display is the core of this navigation. It takes into consideration all relevant factors such as state of charge of the high-voltage battery, driving style, topographical preconditions and even the current traffic situation. A nearby charging station is displayed upon the driver's request. The system also informs the driver about how much charging time is required in order to be able to complete the return journey or the journey to another destination.

In the I01 the driver is able to access the so-called "Intermodal route". "Intermodal route guidance" is understood to support individual mobility by networking existing traffic systems. An integrative connection and the synergetic use of different means of transportation is effected for this purpose. So that the driver of a BMW I01 reaches his destination quickly and relaxed, the use of the vehicle with the transport modes of the public transport utilities is intelligently linked taking into consideration the parking situation.

The operating concept of the navigation menu known from other BMW models was retained and adapted to the I01 through functional enhancement.

There is an overview of the adapted menu below.

### 3.2.1. Destination input

The addresses of the last 30 charging stations used, for example at home, are automatically stored. The charging stations can be called up and used as a destination in the route guidance.

Call up last charging station:

- 1 "Navigation"
- 2 "Last charging stations".

Start route guidance:

- 1 "Navigation"
- 2 "Last charging stations"
- 3 Select charging station
- 4 "Start route guidance".

It is now also possible to search for charging stations under "Special destination" or "Category search".

# I01 Information and Communication

## 3. Functions

Depending on the national-market version and available online data, a colored symbol marks the utilisation of the charging station.

Green:	Charging station is free
Yellow:	Charging station is partially occupied
Red:	Charging station is occupied



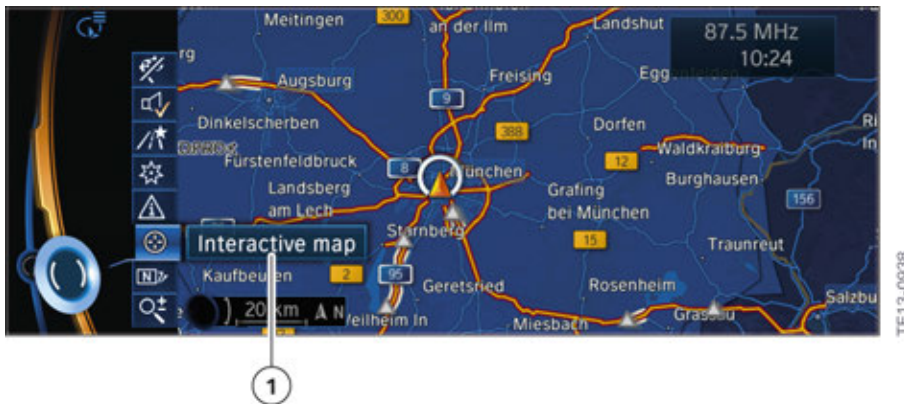
Also with the latest navigation and online data information on the individual special destinations may have changed, for example charging stations may not be in operation.

### Intermodal Information

Destination input via map:

By using the "Interactive map" and the menu selection "Public transport" the customer can now have information on public transport displayed on the central information display (CID).

The operating concept is shown below:

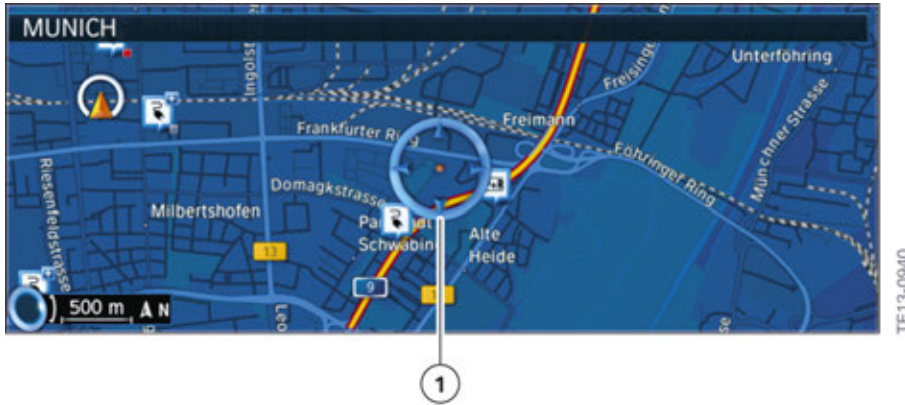


Interactive map

Index	Explanation
1	"Interactive map" menu item

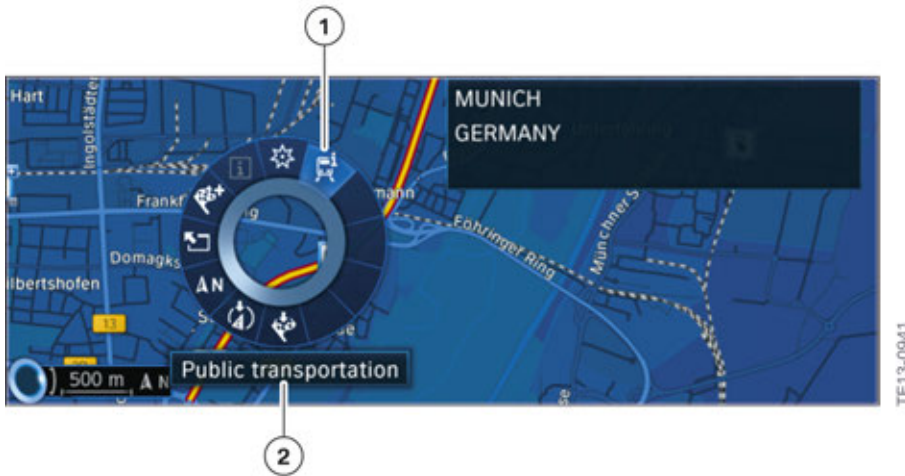
# I01 Information and Communication

## 3. Functions



Selection of the destination via "Interactive map"

Index	Explanation
1	Selection of a destination in the menu "Interactive map"



Intermodal Information

Index	Explanation
1	"Public transport" symbol
2	Public transport



# I01 Information and Communication

## 3. Functions



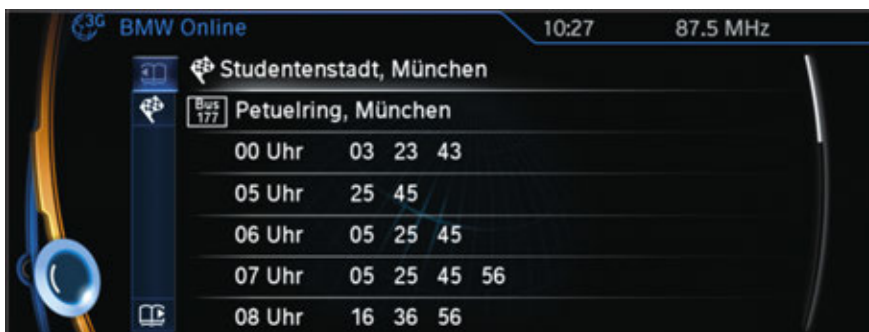
Display information on public transport

Index	Explanation
1	Selection of transfer option



Selection of special destination. Example "Studentenstadt, Munich" station

Index	Explanation
1	Selection of transfer option for public transport



Selection of public transport. Example Information on "Bus line 177, Petuelring, Munich"

Index	Explanation
1	Detailed information on public transport is displayed



# I01 Information and Communication

## 3. Functions

The search function offers a further option to obtain information on public transport.



Intermodal information: Search via Point of Interest

### 3.2.2. Route guidance

#### Intermodal route

The route planning, which was developed especially for BMW i and the requirements in urban districts, also integrates the public transport offer. In selected towns and cities the public transport is considered when the route guidance is activated and can be included in the route planning.

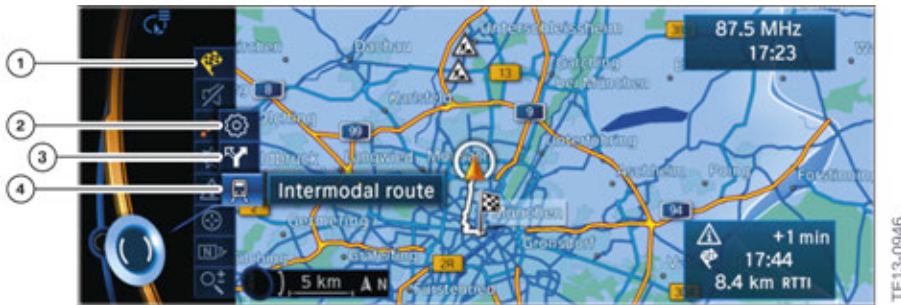
The route to the parking lot at the next suitable transfer option for public transport is calculated.

The driver has the option in his vehicle to select an intermodal route. He is guided to a car park or multi-story car parking lot. After leaving the vehicle he is guided to the correct public transport station, for example tram line, with help of the BMW i Remote app, and also on the last stage by foot to his destination. Using the BMW ConnectedDrive server the destination address previously input in the navigation system of the vehicle is automatically transmitted to the smartphone of i3 driver.

The driving details for the onward journey are also displayed with the public transport.

# I01 Information and Communication

## 3. Functions



Intermodal route

Index	Explanation
1	Route guidance
2	Route criteria
3	Alternative route
4	Intermodal route



Intermodal routing. General view in central information display

Index	Explanation
1	Intermodal routing
2	Current position
3	Route
4	Park and Ride with transfer option for public transport
5	Path

# I01 Information and Communication

## 3. Functions



Alternative routes

Index	Explanation
1	Alternative routes



Selection of "Alternative route"

Index	Explanation
1	Planned arrival time
2	Path
3	Time calculated in minutes
4	Number of changes
5	Selection of transfer option for public transport

# I01 Information and Communication

## 3. Functions



Intermodal routing. Menu in smartphone

TE13-0952

Index	Explanation
1	Intermodal routing

### 3.2.3. Range Assistant

The Range Assistant as part of the navigation system has the following functions:

- Display of charging stations
- Range map and return journey options.

The Range Assistant dynamic range map also considers the current traffic situation and the present route profile, in addition to the state of charge of the high-voltage battery, the driving style and the selected driving mode. If a destination entered is outside the calculated range, the system gives the driver tips for a more efficient driving style.

If a return to a preferred charging station is not possible, the Range Assistant enables a selection of the most efficient route (ECO PRO route). The Range Assistant also suggests alternative charging stations in the surrounding area. The driver can also increase the range by selecting ECO PRO+ mode with the driving experience switch.

# I01 Information and Communication

## 3. Functions



Range recommendation

Index	Explanation
1	"Range recommendation" menu
2	ECO PRO route
3	ECO PRO+ mode

The Range Assistant checks whether a destination entered can be reached using the current state of charge of the high-voltage battery. If the range is insufficient, different recommendations to increase the range are automatically displayed.

The list of recommendations can be found below:

"ECO PRO route"	A consumption-optimized variant of the route is calculated and stored in the route guidance. The new route is displayed in the map view and the route guidance is continued.
Switch from "ECO PRO mode" to "ECO PRO+ mode"	The range can be increased by switching to ECO PRO+ mode.
"Search for charging stations"	A search for charging stations along the route is performed and can be stored in the route guidance as a destination or stage finish.

### ECO PRO route

The customer receives support during the selection of an optimized route taking into consideration the energy management. The combination of a specific electric vehicle navigation "ECO PRO route" as an integral element of the navigation system and the powertrain driving mode "ECO PRO" and "ECO PRO+" is the perfect symbiosis of ConnectedDrive and a purely electric motor.

For instance, the Range Assistant dynamic range map also considers the current traffic situation and the present route profile, in addition to the state of charge of the high-voltage battery, the driving style and the selected driving mode. If a destination entered is outside the calculated range, the system gives the driver tips for a more efficient driving style.

### ECO PRO mode

# I01 Information and Communication

## 3. Functions

ECO PRO mode adapts the accelerator characteristic curve, with the same pressure applied to the pedal less power is used. The heating and air-conditioning system also works in a more energy-saving manner. The restriction of the maximum speed can be adjusted between 80 km/h (50 mph) and 130 km/h (80 mph) using the iDrive.

### ECO PRO+ mode

ECO PRO+ mode is aligned to a maximum range. The energy consumption and the range of the vehicle can be actively influenced by the driver by changing the driving mode. By using the driving experience switch the driver has the option to also increase the range by switching from ECO PRO to ECO PRO+ mode.

The maximum speed is restricted to 90 km/h (55 mph). The power of electrical consumers such as seat heating and mirror heating are reduced and partially deactivated, the heating and air-conditioning system is shut down to a minimum.



Switch block with driving experience switch

Index	Explanation
1	Driving experience switch

### Charging recommendation

The remaining range is calculated and if required charging stations along the route are displayed. Under the menu item "Charging" a list with charging stations is displayed. It is possible to immediately assume the charging station as a destination in the route guidance. There is also the option to include charging stations as an additional destination in the route.

# I01 Information and Communication

## 3. Functions



Charging recommendation

Index	Explanation
1	Recommendations
2	Outside the range
3	Search for charging stations



Also with the latest navigation and online data information on the individual special destinations may have changed, for example charging stations may not be in operation.

### 3.2.4. Map view

In the map view the menu was extended with the menu item "E-range (2D)".

By selecting the menu item "E-range (2D)" the range map is shown in the central information display (CID). The ranges with the current and most economical driving mode are shown in the map in the form of colored fields.

- In the current driving mode, for example "Comfort", the range for the respective driving mode is shown, as well as the maximum possible range. The maximum possible range is calculated based on ECO PRO+ mode.
- When ECO PRO+ mode is activated the maximum range is shown in the form of a field.

The following graphic shows both a possible range in "Comfort" mode (light blue area, inner, on the map), as well as the maximum range in ECO PRO+ mode ("narrow" dark blue area).



# I01 Information and Communication

## 3. Functions



Range map

Index	Explanation
1	Symbol for route guidance, yellow: Range tight; red: Range insufficient
2	Range in "Comfort" mode (in the map the light blue area, inner)
3	Maximum range in ECO PRO+ mode ("narrow" dark blue area)

If a preferred charging station was specified, this is also displayed in the map.

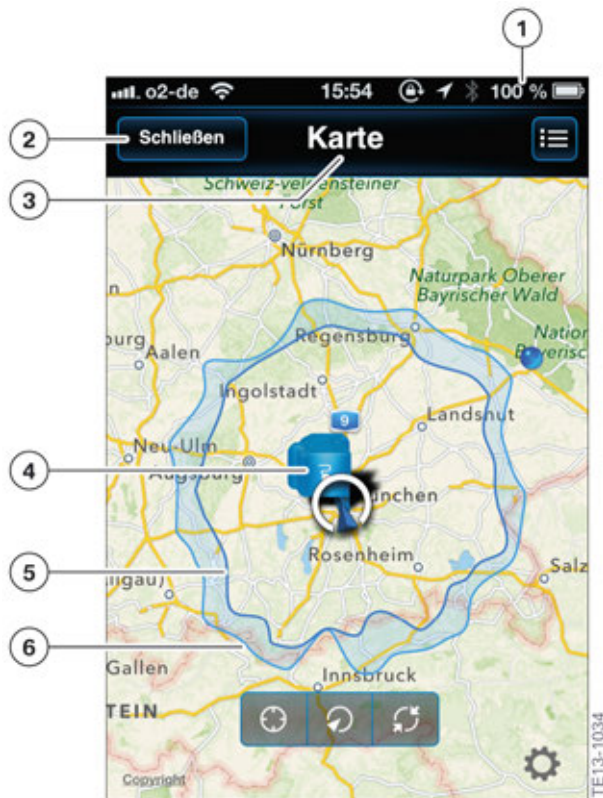
The customer also has the option of having the range map displayed on his smartphone using the BMW i Remote app.

The following graphic shows the schematic diagram of the range map on the smartphone.



# I01 Information and Communication

## 3. Functions



Range map, display on smartphone via BMW i Remote app

Index	Explanation
1	Charging status display, smartphone
2	End display
3	Map
4	Location display of charging stations
5	Range in current driving mode
6	Maximum range in ECO PRO+ mode

### 3.3. Updating navigation data

The navigation data is updated using a USB stick. The reason here being that the DVD drive is no longer used in the I01. Another reason is that some road maps have to be spread out over several DVDs due to their size (e.g. a map of Europe requires three DVDs). A USB stick with corresponding capacity is practical here.

The navigation data (map data) in the vehicle can also be updated via the BMW programming system.

# I01 Information and Communication

## 3. Functions

### 3.4. BMW ConnectedDrive

In addition to the navigation system, the BMW i ConnectedDrive Services are fully customized to the specific requirements of electric mobility.



In addition to the state of charge of the high-voltage battery, the activities of electrical convenience functions, the driving style and the selected driving mode, topographical specifications, as well as the current traffic situation, are also included in the calculation. The system can calculate an upcoming uphill drive, as well as stop-and-go traffic or a traffic jam, as energy-intensive, thereby reducing the range. Current and detailed real time traffic data (Real Time Traffic Information) is also used. The analysis and evaluation of the information is done centrally on the BMW ConnectedDrive server which is permanently connected to the vehicle. The connection between the vehicle and the BMW ConnectedDrive server is guaranteed by a permanent SIM card installed in the vehicle. The permanently installed SIM card is located in the Telematic Communication Box (TCB) and guarantees a connection beyond the entire service life of the vehicle.

Via a smartphone the customer has the option of establishing a connection to his vehicle and having important information for his planned route displayed, for example the state of charge of the high-voltage battery.

#### 3.4.1. BMW i Remote App

The BMW i Remote app is a further development of the My BMW Remote app, which was tailored especially for the specific requirements of electric mobility.

The app can be downloaded from iTunes or Google Play.

# I01 Information and Communication

## 3. Functions

While the remote functions have been realized to date using the headunit, in the I01 these are implemented via the Telematic Communication Box (TCB). The response time of the BMW i Remote app was therefore able to be minimized.

The remote functions accessible via a smartphone enable a vehicle to be found, show nearby charging stations, permit the charging of the high-voltage battery and activation of convenience functions at the touch of a button and provide information on current vehicle data, e.g. the state of charge of the high-voltage battery.

If the BMW i3 is connected to a charging station, the charging procedure is started or ended remotely, or even controlled using a timer.

Using the BMW i Remote app a destination and a free charging station can be selected and then transmitted to the vehicle.

With help of the intelligent BMW i Remote app the driver can plan his route before the journey and check the maximum range regularly. The driver can select a destination using his smartphone and then transmit this to the vehicle.

If the customer leaves his vehicle at the destination, he also has the option of being navigated to his final destination via a pedestrian navigation function integrated in the BMW i Remote app. The destination, which the driver has selected beforehand in the vehicle, is automatically transmitted to the BMW i Remote app via the BMW ConnectedDrive server.



BMW i Remote App. Example: Activation of the charging procedure

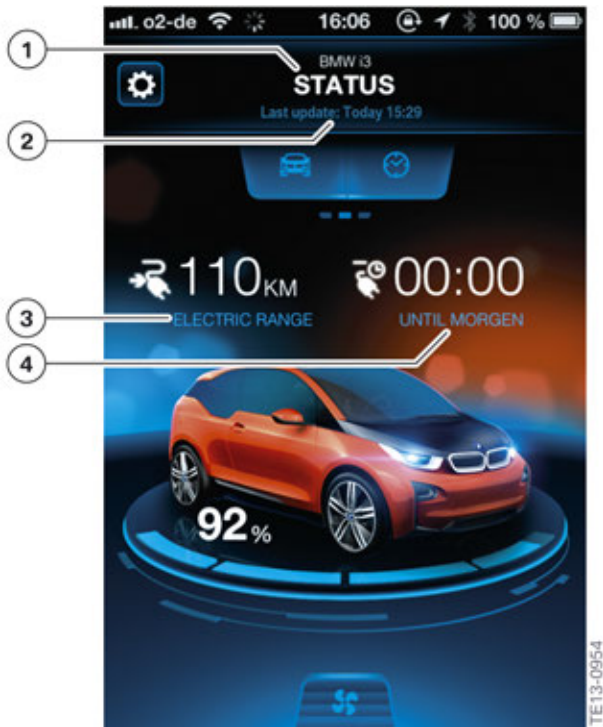
The BMW i Remote app can be used in conjunction with a device (e.g. smartphone), which has a IOS or an Android operating system.

The BMW i Remote app comprises three main menu items:

- Status
- Mobility
- Efficiency

# I01 Information and Communication

## 3. Functions



"Status" main menu item

Index	Explanation
1	Status
2	Last update
3	E-range
4	Preset charging time

In the "Status" menu the customer has the option of performing preheating/precooling of the passenger compartment, controlling the charging procedure and having vehicle-specific details (e.g. the state of charge of the high-voltage battery, range, etc.) displayed. With the optional equipment Seat heating for driver and front passenger (option 494) the high-voltage battery is heated if required. The range is thereby optimized.

In the example shown above the state of charge of the high-voltage battery is at 92 % and the range is 110 km.

# I01 Information and Communication

## 3. Functions



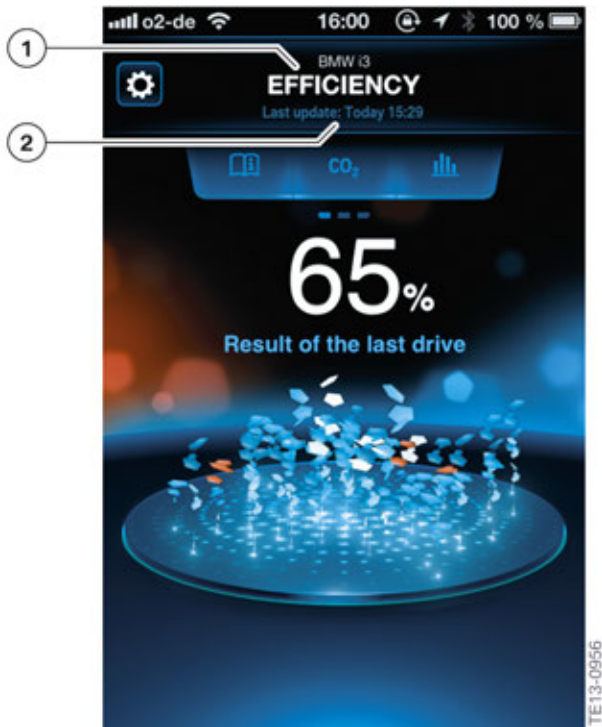
"Mobility" main menu item

Index	Explanation
1	Mobility
2	Data update
3	Route to vehicle
4	Route to destination

The "Mobility" menu offers the customer the option of being navigated to his destination or his vehicle using the "Pedestrian navigation". This menu also provides information on charging station options, graphic range schematic diagrams (range spider), information on public transport, etc. It is also possible to send the addresses or Points of Interest (POI), for example, from the smartphone to the vehicle.

# I01 Information and Communication

## 3. Functions



"Efficiency" main menu item

Index	Explanation
1	Efficiency
2	Last update

The driver has the option of anonymously comparing his drivability to another BMW i3 user at the end of a journey. For instance, he receives notes for a more efficient driving style and tips on optimizing his drivability.

In the example shown above the efficiency result of the last journey is 65 %.

The following submenus are available in the BMW i Remote app:

Status	Mobility	Efficiency
Vehicle info	Point of Interest Send2Car	Efficiencytainment CO2 counter
Remote Services	Last mile	Efficiencytainment tutorial
Vehicle status	Route to vehicle	Efficiencytainment statistics
Charging timer	Search for charging stations for electric vehicles & schematic diagram of charging stations	Efficiencytainment community
Climatize now	Reservation for charging station for electric vehicles	Efficiency trainer after the journey, logbook
Range	Filter for charging station for electric vehicles	Efficiency trainer during the journey

# I01 Information and Communication

## 3. Functions

Status	Mobility	Efficiency
	Charging station for electric vehicles occupancy display	Efficiencytainment charging analysis
	Range spider	
	Point of Interest favorites + accessibility	

# I01 Information and Communication

## 4. Car Sharing

### 4.1. DriveNow

DriveNow is car sharing - a joint venture between BMW Group and Sixt AG. Both companies each have a 50 percent share in the joint venture. The BMW Group supplies the jointly owned company with the vehicles and the vehicle technology. Sixt AG provides premium services, leasing know-how, IT systems, as well as a comprehensive station network for the registration of customers. DriveNow offers a modern mobility concept in Munich, Berlin, Düsseldorf, Cologne and San Francisco. An important feature of DriveNow in Germany is the rental and return of the vehicles at any station.

DriveNow only uses high-quality premium vehicles from the MINI and BMW brands. All vehicles have at least four seats, all convenience functions (e.g. Park Distance Control, automatic air conditioning, seat heating, etc.) and extremely efficient engines. The vehicles are marked with the DriveNow logo and are easily recognizable. Other models can also be flexibly included in the car-sharing fleet at a later date depending on demand.

With the integration of the ActiveE vehicles, one was able to obtain valuable findings in the area of electric mobility and in e-Car Sharing. This is a further step towards developing sustainable BMW i mobility solutions for congested urban areas, in which sufficient charging infrastructure is available."

### 4.2. System description

#### Access authorization

The customer must register beforehand with the fleet operating company so he can use the Car Sharing vehicles. He receives an "authentication device" which he can use in the future to open and start the vehicles. The authentication device is issued in the form of a label or a card. In order to ensure the legal requirement for a driving licence check by the fleet operating company is satisfied, the authentication device is currently adhered to the driving licence. In later expansion stages the authorization can be transmitted to an authentication device which the customer takes to the company, e.g. a smartphone.

#### Finding and booking a vehicle

With "Private Car Sharing" there are currently three ways to find and book a vehicle:

- Telephone call to the operating company hot-line
- On the Internet, e.g. from a home PC
- Smartphone app, which locates the vehicles online.

This way the customer has the option of reserving a vehicle which is located at a convenient location. This vehicle is then "blocked" for the next 15 minutes. After arriving at the vehicle the customer can open the vehicle and confirm the booking. The booking is made very conveniently via a smartphone, the customer is guided to the vehicle.

With "Private Car Sharing" there is also the extra option of spontaneously booking directly at the vehicle.

The customer can book and use a vehicle he sees spontaneously at the car park. A prerequisite is that the vehicle has not already been reserved by someone else. A vehicle which has already been reserved can be identified using the status display located at the windshield. Only if the status display illuminates in green, can the vehicle be booked spontaneously by the customer.



# I01 Information and Communication

## 4. Car Sharing

The status display is located behind the windshield at the bottom left, is visible from the outside and integrated in the outer reader:

LED illuminates green:	Vehicle is available
LED illuminates yellow:	Vehicle is reserved
LED illuminates red:	Vehicle is in use by a customer and was parked "for a short time" (locking system must be locked)



TE13-0839

Outer reader with status display for Car Sharing

With "Private Car Sharing" the booking period is not defined at the start. It only ends when the customer no longer requires the vehicle and terminates the booking. The customer does not have to provide any details on the planned booking period at the start.

The following differences arise for "Corporate Car Sharing":

- Spontaneous booking is currently not planned
- The customer can reserve a vehicle in advance. He can specify the location at which he would like to pick up the vehicle, the vehicle type or a specific vehicle
- The customer must specify the planned usage period at the time of booking.

### Opening the vehicle

The customer can open the vehicle by holding his authentication device, in Germany his driver's licence with the adhered NFC transponder, in the scan area of the vehicle's outer reader. If the customer is authorised to use the vehicle the central locking system of the vehicle opens.

The delivery and return of a vehicle are only possible at locations with radio link. It is also possible to close and open the vehicle in the event of an interruption to a journey, i.e. parking without return, at locations without GSM reception.

### Booking a vehicle

After the customer enters the vehicle, he receives a personal welcome on the central information display (CID).

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## 4. Car Sharing

Before using the vehicle a booking or reservation must be effected:

PIN input:

- The customer must correctly enter his personal PIN code.

Query on cleanliness:

- The customer is asked about the cleanliness of the vehicle.

Confirmation of damage:

- Damage already reported is displayed to the customer. Then the customer can report new damage via the hot-line or confirm that no other damage is present.

Confirming a booking:

- The customer confirms the rental conditions.

If the customer has successfully completed the booking, he can use the vehicle.

### Using a vehicle

In order to establish driving readiness, the customer receives a note on the central information display (CID) that he must set down his authentication device on the Car Sharing module and press the accelerator.



Car Sharing Module

After the driving readiness of the vehicle has been switched off, a specific Car Sharing menu is shown on the central information display (CID). The following options are now available to the driver:

- Steady driving
- Parking
- Terminate booking.

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### **Steady driving**

With the selection "Driving" the customer receives a note that the vehicle can be set to driving readiness via the START-STOP button. This is the standard selection and does not have to be selected explicitly. Generally the customer can re-establish the driving readiness by pressing the START-STOP button independent of the menu selection and continue to drive. A prerequisite for enabling the driving readiness is the storage of the authentication device at the Car Sharing module.

### **Parking**

Park vehicle means interrupting the journey without returning the vehicle. The booking is still active and the status display in the outer reader displays this with a red LED.

### **Terminate booking**

With Private Car Sharing this can be done at all public car parks, sometimes at residential parking spaces and in multi-storey car parks of cooperation venture partners within the business area.

There are no additional costs for the parking fees for the customer at selected public car parks and multi-storey car parks as these are included in the per minute charge.

The customer cannot return the vehicle outside the business area and in non-approved residential parking spaces, as well as in car parks which are subject to a fee for Car Sharing. This means the customer receives a message that he cannot terminate the booking at this location. With this message the customer has the option to display the Car Sharing map with the marked parking facilities.

In this map the business area, the blocked residential parking spaces, the preferred return areas, the free multi-storey car parks and the current position of the vehicle are shown. During the journey the location of the vehicle is constantly updated. If the customer terminates the booking at a preferred return point or area, then he receives a bonus.

With Corporate Car Sharing there are no parking fees included and the vehicle generally has to be returned at defined locations.

The vehicle can essentially only be returned at points at which there is a data line to the BMW "back-end" server.

The last step is the vehicle check by the Car Sharing module. Only when all windows and doors are closed, the vehicle is secured against rolling away and all card payments are made, can the booking be terminated. A corresponding note is displayed depending on defects. Up to four payment cards are accepted in the vehicle (credit card, fuel card, parking ticket and bonus cards).

Lastly the customer is notified that the booking is only terminated once the vehicle has been locked from the outside and the LED display acknowledges this with a green symbol.

### **Locking the vehicle**

The customer can lock his non-locked (booked) vehicle from the outside by holding his authentication device at the card reader.

A vehicle is generally only locked when all doors and the tailgate are closed.

When a car is parked, the vehicle condition and the parking location are checked if the customer has selected one of the options "Parking" or "Terminate booking".

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## 4. Car Sharing

Depending on the fleet operating company the preconditions of the vehicle monitoring can be defined, for example:

The vehicle condition and the parking location are checked again after the vehicle is locked. If no option with regard to the vehicle use was selected, the "Parking" option is accepted. All caps and flaps must now be closed and also locked.

- If the vehicle condition or the parking location are not OK after closing, the red LED flashes for a certain period. The defects are shown on the CID control display. Afterwards the red LED continues to light up until the vehicle is booked.
- If "Terminate booking" was selected by the customer in the Car Sharing menu and the vehicle condition and the parking location are OK, then the booking is terminated after the vehicle is closed and this is displayed with a green LED.

### Interaction with navigation

The customer can obtain support with regard to navigation for the following actions:

- Display of Car Sharing map:

The customer can have a map displayed which shows the business area, the prohibited residential parking spaces, the preferred return areas, the preferred or free multi-storey car parks and the possible filling stations. With Corporate Car Sharing only the possible return areas or the agreed return point are shown. The current position is also displayed. During the journey the location is constantly updated.

- Transfer of personal Points of Interest:

The customer can store his personal destinations (POI - Points Of Interest) in his user account. He can then access these in any vehicle and start the route guidance by the navigation system of the vehicle.

- Route guidance to a specific Car Sharing filling station/charging station:

The driver can have a list of Points of Interest with the nearest filling stations/charging stations displayed. By selecting a Point of Interest the navigation system starts the route guidance to this filling station/charging station.

- Route guidance to a preferred return area or multi-storey car park:

The driver can have a list of Points of Interest with the nearest preferred return areas or multi-storey car parks displayed. This selection is also shown to him if he would like to terminate the booking outside the business area or would like to park in a prohibited residential parking space. The destination selection still works.

### Service and maintenance

For Service and maintenance by the fleet operating company Car Sharing offers the transmission of the vehicle position and the vehicle condition.

At the end of the booking the vehicle transmits the following information via BMW to the fleet operating company:

# I01 Information and Communication

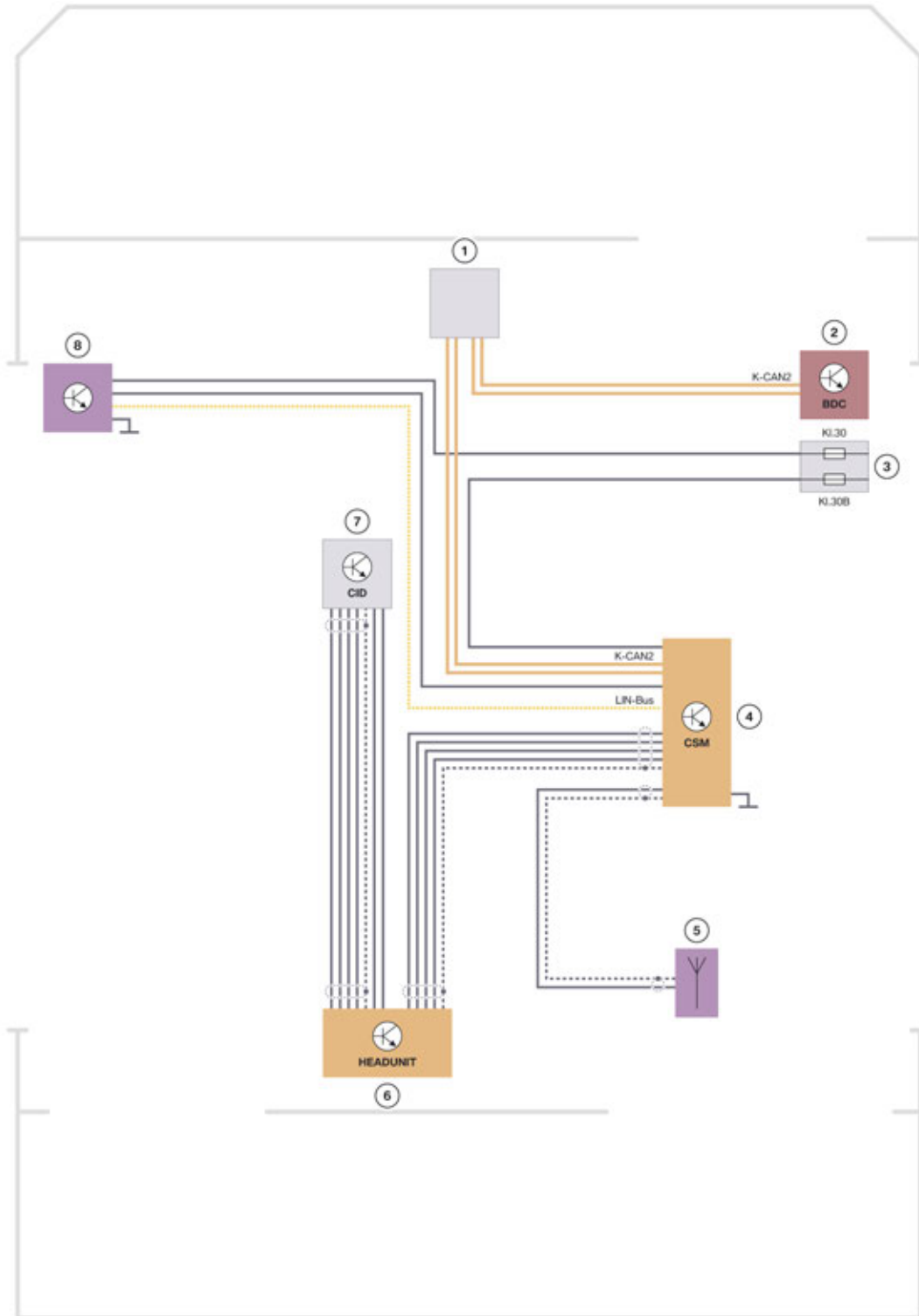
## 4. Car Sharing

- GPS coordinates of the vehicle position
- Fuel tank capacity / state of charge of battery
- Kilometer reading
- Condition of caps, flaps and windows
- Secure against rolling away
- Status of maps to be monitored (e.g.: fuel card, parking ticket, credit card, etc.).

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## 4. Car Sharing

### 4.3. System wiring diagram



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System wiring diagram for Car Sharing

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<b>Index</b>	<b>Explanation</b>
1	CAN terminator
2	Body Domain Controller
3	Fuse
4	Car Sharing Module
5	Roof antenna
6	Headunit
7	Central information display
8	Outer reader



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